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***Europe/International
Economic Competitiveness***

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Economic Competitiveness

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SCIENCE & TECHNOLOGY POLICY

Germany: BMFT Funds R&D Program on Infectious Diseases

MI2311102193 Bonn TECHNOLOGIE-NACHRICHTEN
MANAGEMENT-INFORMATIONEN in German
15 Oct 93 pp 4-5

[Text] BMFT [Federal Ministry of Research and Technology] funding of research on infectious diseases to date has shown that basic research has attained world level, whereas there is still ground to be made up in, primarily, applied, patient-oriented research. The new "Infection Research" funding scheme, which is being launched under the "Health Research 2000" program, will take account of this experience. It will bring together and continue existing BMFT funding measures on AIDS, tropical medicine, and other infectious diseases. In future, priority will be given to funding projects with particular potential for enhancing clinical research structures in this area. It is initially intended to fund the scheme with approximately 35 million German marks [DM] a year. The following individual topics will be covered:

- The AIDS pandemic has made everyone aware of the health hazard to the population posed when new pathogens appear. With an estimated 60,000 to 70,000 patients infected in Germany alone since the outbreak of the pandemic, AIDS-related topics will continue to require an enormous amount of work. However, topics such as infection via tick bites (Lyme's borreliosis) and the much-debated possibility of the transfer to humans of what is popularly known as "mad cow disease" are also worth mentioning in this connection. These examples illustrate the need to create sufficient research capability to meet new challenges effectively.
- The rapid increase in salmonella cases in recent times has shown how known pathogens spread: The number of new infections has doubled in only 10 years to over 90,000 cases a year. The constant rise in the number of infections contracted in hospital, which constitutes a growing problem for our health system, is also a major issue here.
- The phenomenon of resistance to antibiotics has been known for a long time but has recently become a greater hazard with the advent of multiresistances in tuberculosis pathogens and the progressive development of resistance in the malaria tropica pathogen.

The transition of findings from research into practice is still being hindered by a lack of cooperation between basic research and clinicians. One of the reasons why this is so in Germany is that infectious diseases have low priority as a clinical specialization, which, indeed, is absent from most university clinics. Three funding channels designed specifically to remedy these shortcomings will therefore be used to continue existing BMFT funding of research into infectious diseases:

- The funding of joint research is intended to foster local, regional, and national interdisciplinary cooperation. The funding authority specifies no particular topics, so all areas of applied research into infection are eligible.
- In order to place the study of infectious diseases on a firmer institutional footing, structural aid for university research facilities and funds for redirecting existing facilities will be granted. This offer of financial priming over a limited period is designed primarily to stimulate and support research work in faculties of medicine, which has largely had to give way to routine health care work over recent decades.
- A grants scheme will be available to attract trainee scientists to this field. This scheme follows on from the established AIDS grant scheme, which will cease to be exclusive to work on AIDS in the future. As a rule, funding will be provided for a two-year term spent at a research facility of international renown followed by a post at a German institute for a maximum of three years.

The BMFT is currently funding infectious disease research under four main headings:

- AIDS: Shortly after the first cases of the disease were reported in Germany, the BMFT issued an initial announcement on research funding at the end of 1983. 1984 saw the beginning of the first projects financed by the BMFT. Since then, 138 medical and natural science research projects, 34 social science research projects, and nine clinical research consortia (in Berlin, Frankfurt (2), Hamburg, Hannover, Heidelberg, Munich (2), and Wuerzburg) have been funded and 58 grants awarded. Overall, approximately DM165 million have been spent to date on AIDS research. In the initial stages it was necessary to fund AIDS research under a single program to react rapidly to a new health policy challenge. German AIDS research has attained a high standard, although a solution to the AIDS problem cannot be expected in the short term. The topic will therefore remain a major area for funding.
- Tropical medicine: The BMFT intended this program to provide targeted funding for research on tropical medicine in areas where the funding could be expected to promote long-term structural improvements. The first measure introduced was the comprehensive restructuring and reorientation of the Bernhard Nocht Institute of Tropical Medicine in Hamburg, on which DM8.7 million have been spent since 1992.
- Diagnostics of infectious diseases: The primary goal here was to improve and extend the available range of methods for detecting pathogens or pathogen components and antibodies in viral, bacterial, fungal, and parasite infections. Grants totaling about DM17 million were awarded to 46 projects between 1981 and 1991.

—Infectious diseases: This heading covered the whole range of research from fundamental principles to diagnostic and therapeutic advances and vaccine development. Between 1987 and 1992, a total of 54 individual projects, 10 consortia, and one case of structural aid (for Wuerzburg University's Infectious Disease Research Center) were funded for an approximate total of DM67 million.

Further information on the Infection Research funding scheme may be obtained from the BMFT's Health-Related Research Project Manager, German Aerospace Research Institute, Suedstr. 125, D-53175 Bonn, tel. 0228/3821-210.

Germany: Krueger Advocates Research Initiative

AU231114393 Hamburg WELT AM SONNTAG
in German 21 Nov 93 pp 41-42

[Interview with Research Minister Paul Krueger by Romanus Otte in Bonn; date not given: "Krueger: 'We Have To Be Careful Not To Miss the Train'"]

[Text] [Otte] For months now, there has been a fierce controversy over Germany as a business location. The main issues are costs, wages, and working hours. Is the importance of research and technology being underestimated?

[Krueger] I think there are some politicians that still underestimate research. However, quite a lot has finally been set afoot.

[Otte] Political and economic representatives are calling for an "innovation offensive," which sounds good, but what exactly does it mean?

[Krueger] We want to provide a new impetus and formulate new approaches. For this purpose, I first established a strategic circle with renowned economic, scientific, and political representatives and, in addition, many dialogue circles on specific topics. In this strategic circle, we have already agreed on three main points.

[Otte] What are they?

[Krueger] We have to improve the framework conditions. This includes the legal framework, for example, the gene technology law, the animal protection law, the chemicals law, and, not least, the data protection law. We want to shape these laws so that they do not curb innovation. However, the public's open-mindedness regarding research and technology is also decisive here. It must increase.

Moreover, we have to ensure that research becomes more effective. Young talent is important. We also have to promote the elite more and better translate the researchers' findings into products.

[Otte] What can you do to improve the research climate?

[Krueger] We have to better show that innovation creates jobs. In gene technology alone, 2 million jobs will be created in Europe by the year 2000. However, we also have to take fears seriously and openly admit that every new technology involves risks. We have to point out to people that technology, above all, offers great chances. And even more: It is the only way out for us so that mankind can survive. We do not have an alternative.

[Otte] Why do the Germans find it so hard to translate their research results into good products?

[Krueger] This is incomprehensible to me. Germany has one of the most excellent basic research sectors of the world. On the other hand, we also have an excellent production structure. However, too much is lost on the way from research to the actual product. The Japanese copy many things from us and then they do it.

[Otte] You have the reputation of wanting to push on with application at the expense of basic research.

[Krueger] This is out of the question. We want to maintain the high level of basic research.

[Otte] What do you want to do to promote translation into products?

[Krueger] We have to overcome the barriers between science and economy. We have to make the flood of information—which is, for smaller enterprises especially, no longer clear—easy to grasp. We have to overcome communication deficits but also the arrogance of scientists and managers.

[Otte] Are the German enterprises doing enough for research?

[Krueger] They are clearly not doing enough. We have to increase the preparedness of economic representatives to financially participate in research work.

[Otte] Can you give an example?

[Krueger] I think of the energy field, which is topical. The financial situation of the supply enterprises is not exactly bad. They would have to increasingly participate in research and development, including alternative energies. I want to establish a fund that is similar to the chemical industry fund to pay for energy research. The enterprises should participate in it.

[Otte] Germany is the only industrial country where expenses for research and development are not tax-privileged. Is this still up to date?

[Krueger] No. Therefore, I am working on a concept on how we can exempt innovation from rates and taxes. I think that this is a very important measure.

[Otte] You are calling for tax relief for research expenses?

[Krueger] Yes, by all means.

[Otte] How?

[Krueger] It would certainly be counterproductive to discuss this as early as now.

[Otte] But you could at least disclose the direction.

[Krueger] I envisage that we promote an increase in research and development, in particular. In this way, we can avoid pickup effects [Mitnahmeeffekte]. However, I do not want to go too far here. I am very open to discussion.

[Otte] When do you plan to present your concept?

[Krueger] We are conducting talks with the finance ministers and the laender. The laender would have to support us because they would also have to forego tax revenues. I would like to quickly implement this. However, it will not be possible before the next budget—that is, in 1995.

[Otte] Your 1994 budget is stagnating. However, at least, you will receive special funds amounting to another 150 million German marks for the new laender. What are you planning to do with the money?

[Krueger] I would like to use it for the transfer of know-how to the enterprises. In general, the improvement of these transfers is important. In the new laender, I see an opportunity for this in an institution like, for example, the Steinbeis Foundation in Baden-Wuerttemberg.

[Otte] Regarding space flights: You have created the impression that you are not very partial to them.

[Krueger] Those who know me know that I am neither a friend nor an opponent of them. It is an important technology, particularly satellite technology.

[Otte] Do we also need expensive manned space flights?

[Krueger] I think that manned space flights are also an unrenounceable option for mankind. They belong to the provisions for our existence. However, the great projects can no longer be managed by one nation but only globally. Lately, the Americans and the Russians have closely cooperated. We have to be careful that we do not miss the train. From the first day onward, I have attached importance to our speedy participation in the U.S.-Russian projects.

[Otte] How do you assess the chances for it?

[Krueger] Very good. However, some things still have to be clarified. We not only have a moral but also legal claim. We are calling for it.

Germany: BMFT Funds Molecular, Natural Sciences R&D

MI2311142593 Graefelting BIOENGINEERING
FORSCHUNG UND PRAXIS (Special Insert)
Oct-Nov 93 p 5

[Text] A new funding scheme that constitutes a major component of the Federal Government's "Biotechnology 2000" program sets out to marry modern molecular biology with conventional research into natural substances. It has been allocated an overall budget of 100 million German marks [DM] over the period 1994-1998, DM50 million to be awarded in the form of institutional funding for facilities including "Blue List" establishments in the new federal laender. The remaining DM50 million are earmarked for joint project funding. The scheme is also intended to help secure Germany's status as a center of biotechnology research and production.

Research into natural substances is of major importance for areas such as pharmacy and diagnostics, veterinary medicine, and plant protection. Drugs for treating cardiovascular complaints and tumors and new antibiotics are examples of the products that can be developed from natural substances, which are extracted from plants, fungi, mosses, microorganisms, and both animal and vegetable cell cultures. However, only about five percent of the total of approximately 2 million species of living organisms on Earth have been studied to date for biological content. Advances in molecular biology provide modern methods that substantially improve the targeting and efficiency of the search for natural substances, make it easier to synthesize natural substances, and throw greater light on how they work.

Status of Natural Substance Research in Germany and Need for State Action

Until the seventies, Germany had a leading role in research into natural substances (e.g., in the preparation of antibiotics). This lead, measured in terms of the number of patents granted, has been dramatically reduced over recent years. Japan dominates in areas such as (conventional) natural substance screening, and the United States in molecular biology methods. A Fraunhofer Society survey finds that there is too little natural substance research undertaken in Germany but reports significant industrial R&D contract potential. It should be borne in mind in this connection that at least 30 percent of the world market in pharmaceuticals is based on natural substances or derivatives thereof. According to figures supplied by industry, this market is worth about \$50 million and is growing faster than the entire world market in all goods.

Modern molecular biology at university and nonuniversity research facilities (major research institutes, genetic engineering centers, etc.) has made scientific advances over recent years, which it now appears possible to apply jointly with industry in highly specific activity testing systems. The risks for industry are still too great, however, for this transfer to take place spontaneously, as it is

still impossible to predict whether it will actually be possible to develop reliable molecular biology testing systems, or indeed to bring together the wide range of disciplines required to develop them.

This is where the new funding scheme comes in. It sets out to open this high natural substance potential up for exploitation. In order to combine the requisite forces and to ensure technology transfer, it will fund only joint projects involving one or more companies working with one or more research facilities at the precompetitive stage. The bodies receiving funding will report on their research findings at annual workshops, thus guaranteeing a broad-based exchange of information between science and industry. The development of products consequent on the extraction of natural substances, for instance therapeutical drugs (which currently cost approximately DM300 million to develop) or pest control preparations is up to industry and is not eligible for funding, as the funding scheme focuses on preliminary research.

Research Facilities in the New Federal Laender: Key Role in Natural Substance Research

The Molecular Natural Substance Research funding scheme also seeks to assist in the reorientation of the research facilities in the new federal laender, fostering the formation of a pan-German research and development scene in the discipline concerned. It should be noted that some of the newly founded research facilities in the new federal laender are in a position to play a key role in research into natural substances and constitute a valuable addition to German research and development on this topic.

For example, a high-tech biotechnology center covering subjects ranging from the principles of molecular biology to application-oriented natural substance research is growing up around research at the university, which has been put back on an operative footing, and in parts of a highly developed industry. The "blue list" Institute of Molecular Biotechnology (IMB), where the main bias is toward basic research, is developing pioneering methods and techniques for investigating and exploiting biological blueprints as an aid in decoding the genetic foundations of biocatalysts, for example. The land-owned Hans Knoell Institute of Natural Substance Research (HKI), being more strongly application-oriented, can build on these foundations. It is working primarily on developing, characterizing, and modifying natural substances with a view to acquiring new biocatalysts for therapeutic drugs and biological pest control preparations.

In addition to the institutes in Jena, the blue list institutes of Plant Genetics and Crop Plant Research (IPK) in Gatersleben, Phytobiochemistry (IPB) in Halle, and Molecular Pharmacology (FMP) in Berlin are also contributing to natural substance research. The first two focus on substances occurring in plants that genetic engineering methods can use to raise plants' natural

resistance to pests biologically, while the FMP is working on new biocatalysts for medical uses.

Germany: BMFT Funds R&D Reorganization in Hungary

MI2311145393 Bonn *TECHNOLOGIE-NACHRICHTEN*
MANAGEMENT-INFORMATIONEN in German
15 Oct 93 pp 9-10

[Text] After one year of planning, Hungary is to open the first of several planned institutes for applied, industry-related research: The Bay-Zoltan Institute for Biotechnology in Szeged, southern Hungary, will develop marketable solutions for problems in the areas of food manufacturing, medicine, and environmental technology. Two additional institutes, for materials research and manufacturing engineering, will shortly open in Budapest and the northern Hungarian city of Miskolc.

Hungary is thus the first of the former communist countries in central and eastern Europe to close a significant gap in its research structures remaining from the previous system: This involves successfully devising commercial applications for new scientific developments. This problem is not unknown in western industrial countries; but it is twice as crucial in the reforming countries of central and eastern Europe, as they were unable to adequately develop efficient research units during the era of planned economies, and their industrial firms, presently undergoing the transition to privatization and the market economy, face a crisis leaving them little scope to maintain their own research capacities.

The Federal Research Ministry (BMFT) is providing around 1.3 million German marks [DM] per year in subsidies in 1993 and 1994 for the restructuring of Hungary's research system, under the Federal Government's consulting assistance program for central and eastern Europe. Its priorities include the organization and funding of applied research. The Hungarian government is mainly taking the Fraunhofer Society (FhG) and its research institutes as the model.

The present reforms in science and research provide favorable and unique conditions for such innovations, as the reform process results particularly in significant cutbacks in the scale of the previously privileged and overstaffed academies of sciences and in industrially-based "specialized research." This releases efficient research capacities which can be used in developing new research structures.

In contrast, the reorganized industrial structures have not yet produced any real market for contract research, which is the lifeblood of such institutes. This lack is partially offset by Hungarian funding programs, and, during the start-up phase, by joint projects with German partner institutes.

Germany: Siemens Research Chief Criticizes Government R&D Policy

MI2411144893 Bonn DIE WELT in German 23 Oct 93 p 13

[Article by Hans Juergen Mahnke: "Research Funding Should be More Concentrated"]

[Text] Government-funded research must be oriented more toward the needs of companies and markets. This was the call yesterday from Siemens head of research Hans Guenter Danielmeyer, Chairman of the Presidential Working Group on Research and Development of the Central Association of the Electrical and Electronic Engineering Industry (ZVDI) at the presentation of the review paper "Technologies of the German electrical engineering industry in the 21st century."

The government should concentrate government subsidies on key areas, in a close dialog between industry and science, so as to increase the benefit of research funding. From the point of view of the electrical engineering industry, state funds were needed to translate new products and systems into practical applications, but these funds often came much too late.

For example, the introduction of digital sound radio planned for 1995 was being delayed due to the lack of financial resources of the radio stations, but also because the frequencies had still not been allocated. "There are fears that German industry will lose its technical lead due to unwieldy, bureaucratic hurdles," emphasized Danielmeyer.

Research and technology policy should be understood as a part of planning policy. In Danielmeyer's opinion, there was a gaping hole there. The increase in government funding for basic research from 800 to 1,100 million German marks [DM] planned for 1994 had been scrapped by the government.

Danielmeyer estimated that expenditure by the German electrical engineering industry on research and development would be DM16 trillion in 1993. The electrical engineering industry was thus the most research-oriented sector.

EC's Ruberti Calls for Agreement on Research Program

94WS0024C Duesseldorf HANDELSBLATT in German 7 Oct 93 p 8

[Article by "mbe" under the rubric "Business and Politics": "EC/Blessing Not Yet Given to Research Program. Ruberti Admonishes to Make Haste"]

[Text] Brussels, Wednesday, 6 Oct 93 (HANDELSBLATT, mbe)—Research Commissioner Antonio Ruberti on Wednesday appealed to the EC countries to come to an agreement by December the latest on the precise form of the fourth research master program that is to cover the years 1994 to 1998. Ruberti, who for the first time

presented detailed information concerning various individual plans of the master project, stressed that the continuity of EC research policy has to be maintained.

If the research ministers do not reach an agreement in December, the master program is threatened with a delay because then ratification by the European Parliament will no longer be able to be effected in time. This must be prevented, Ruberti said. Otherwise there is the danger that the Europeans will fall behind the competition in Japan and the USA.

The commission recommended that around 26 billion German marks [DM] be made available for community research policy to 1998, DM2 billion more than in the years 1990 to 1994. He is aware of the tight budget situation in most EC countries, Ruberti said, but "efforts have to be maintained at the present level." It is "not logical" on the one hand to draw attention again and again to the importance of research for Europe's competitiveness, and on the other hand to not grant the proper funds to this sector.

Ruberti said that the funds earmarked by the EC amounted to exactly four percent of the total outlays for research and development granted nationally by the 12 governments. They are of a "supplementary nature." In the future even greater care must be taken to coordinate community and national measures, he said.

The research ministers will concern themselves with the master program again this coming Monday at their meeting in Luxembourg.

Germany: Telematics Improves Scientific Information Exchange

MI0911161093 Munich SUEDEDEUTSCHE ZEITUNG in German 18 Oct 93 p 44

[Article by Olaf Goering: "Highways for Scientific Data: How Scientists at the Munich Max Planck Institute Exchange Data—Communications are the Lifeblood of Research and Development"]

[Text] Modern basic research now requires a constantly increasing outlay to achieve new findings, so particularly close cooperation between facilities working on similar topics acquires all the more importance. This in turn requires data communications using modern means of communication, which, among other things, can speed the work up considerably. Figuratively speaking, this involves "highways" for scientific data, along which growing volumes of findings, announcements, graphics, and other information travel backward and forward.

Experimental elementary particle physics in particular, and other areas such as cosmological research, are now inconceivable without major research facilities, whose costs often run into billions of German marks. The German Electron Synchrotron, DESY, in Hamburg and the European Particle Physics Laboratory at BERN [European Nuclear Research Center], near Geneva, may

be cited as examples. Both are gigantic particle accelerators with technical costs to match. Complex installations of this type are used by scientists and institutes the world over on a work-sharing basis and in project teams. Only constant data exchange between the institutes participating in the respective research programs will guarantee continuity of work at these major research facilities, the data involved ranging from the findings themselves through experiment control software and commands to the exchange of ideas.

The Munich-based Max Planck Institute [MPI] of Physics (the Werner Heisenberg Institute) is taking part in research work at both CERN in Geneva and DESY in Hamburg. The institute is carrying out research into fundamental questions of particle physics, the particles concerned being those making up atoms. Questions such as the energy interactions between the particles are being studied. This can be done in particle accelerators, in which targets are bombarded with electrons, protons, and other high-energy particles, or particles with different charges for instance electrons (negative charge) and positrons (positive charge), are brought into collision, thereby achieving the transition from matter into energy—"annihilation radiation." The scientists then use specially developed, highly sensitive measuring systems to draw conclusions from the disintegration product. The measuring instruments and other components are developed and the experimental data evaluated at the institute itself. One of these developments is a detector for DESY in Hamburg, on which 33 institutes from 11 countries worked together.

An experiment devised to study electron-positron annihilation has been underway at CERN in Geneva since 1989. The scientists at the MPI of Physics have contributed major subdetectors to this project.

Always Well Informed

Scientists from an enormous variety of countries have to work very closely together on the various projects and keep up an intensive exchange of data. They use the Science Network, WIN, which plays a major role in on-line operation, keeping the Munich institute's staff up to date on progress in experiments at CERN or DESY directly from their workstation display units. Communication via E-mail [electronic mail] with partners worldwide regarding joint projects and findings is also important. WIN also makes it possible to update the evaluation software, which is set up and serviced by CERN in Geneva, on a daily basis.

The computing center at the Max Planck Institute of Plasma Physics (IPP) relies particularly heavily on the WIN science network. The institute is working on aspects of basic research relating to the future use of nuclear fusion to generate power. It is working with institutes the world over to create the basic principles, rooted in plasma physics, for a nuclear fusion reactor. In nuclear fusion, the two heavy hydrogen isotopes, deuterium and tritium, are brought into collision at high

speed, generating energy as they form helium. This requires an extremely hot hydrogen plasma, which can only be held together in a magnetic field. The IPP develops and tests devices in which these strong magnetic fields can keep the plasma stable.

The IPP enjoys the support of a powerful computing center for this work. The IPP's computing center is a facility shared by the IPP and the Max Planck institutes of Physics, Astrophysics, and Extraterrestrial Physics. Other institutes can also access the computing center's computers via a 2-Mbit/s WIN line.

As we have seen, science and research rely more and more on a broad exchange of information and data. Letters and, in the best of cases, the telephone were once the only means of communication, but nowadays a whole range of modern electronic communication systems is available, all supported by data transmission networks.

The WIN science network is one of these networks, and it links universities, colleges of technology, and scientific facilities in Germany to one another. It is operated by Deutsche Bundespost Telekom on behalf of the German Research Network (DFN) Promotion Association and is funded by [the government in] Bonn.

By the end of 1992, the volume of data transmitted had reached around 400 gigabytes, equivalent to about 170 million typewritten pages, per month. Unlike Telekom's Datex-P, the DFN Association members pay a yearly lump sum per line, regardless of the quantity of data transmitted. In spite of the cost per line, which remains extremely high, the network does have price advantages over other forms of transmission. The equivalent of about 30 typewritten pages can be transmitted in one second, which costs about one pfennig on a 2-Mbit/s line. E-mail is thus considerably cheaper than, for instance, a fax or even a letter. Data networks will continue to develop, as nearly all facilities urgently need efficient transmission channels for demanding tasks such as linking geographically distant high-performance computers or moving-image transmission in high definition.

Italy: Research Minister Colombo Interviewed

MI0911161293 Milan FATTI E NOTIZIE in Italian
Sep 93 pp 4-6

[Interview with Italian Research Minister Umberto Colombo by Andrea Kerbaker; date and place not given: "Technology, The Key Instrument"]

[Text] [Kerbaker] Some years ago, in the introduction to your study entitled "Science and Technology for the 21st Century" you wrote that: "Although Italy is one of the leading industrialized countries, its scientific and technological activities are still insufficient. The results obtained are sometimes advanced but they are, perhaps, more the results of individual merit and isolated actions than a strong and coherent policy on the subject." Are these words still valid today?

[Colombo] Unfortunately we know that Italy's position as far as research and higher education are concerned is rather modest with respect to that of the countries we are usually compared with. We are doing our best to balance out this situation despite the difficulties that are facing public funding at present. Research expenditure is about 1.4 percent of the gross national product. This is about half of the percentage spent by the other major western countries. The universities are in a similar situation. Not only does Italy have a low level of expenditure, this expenditure is not managed efficiently enough for it to be effective, that is, for research to lead to innovation and for higher education to give us well-prepared graduates.

[Kerbaker] Since that book was written many things have changed at an international level ranging from the fall of the political system in the East Bloc to the international economic recession. How have these changes influenced, and how are they influencing, the technological scene?

[Colombo] Every industrialized country knows that it must improve the quality of its presence on the world markets, move toward the advanced sectors, and introduce science and technology into its manufacturing activities if it is to maintain and improve its position in this competitive world, where the competition is getting stronger and stronger.

[Kerbaker] What will be the guiding lines of your action to boost our country's research?

[Colombo] Our country's research system must be made able to meet economic demands and the demands of our society for scientific innovation and technology. Our actions will include support for the overall research effort, the introduction of measures for the substantial improvement of productivity, and the introduction of a strategic coordination of the various levels of research in our country. The university, public, and industrial research efforts, that have goals of socioeconomic priority, must be made to converge if we are to do this. This is the format of the new three-year research plan we are preparing.

[Kerbaker] Do you think that your policy of stimulating research could have beneficial consequences as far as employment is concerned? If so, in what way?

[Colombo] Efficient and effective research must be supported to maintain and develop the structure of employment in our country. Culturally, we are not convinced that it is only possible to keep jobs if our activities are competitive at an international level, and if we quickly produce products that will meet the rapidly changing demand. Technology is the key instrument for attaining these goals.

Only sound economic activities (industries, services, and agriculture) can ensure that we have the necessary resources to face the social problems of our country, such

as the creation of jobs, the provision of health services, and the safeguarding of the environment.

[Kerbaker] Do we need a new professional figure in Italy who is associated with the theme of scientific research? What sort of person?

[Colombo] Tomorrow's world will require greater flexibility from its professionals, who have traditionally been classified at two fixed levels, those with a high school diploma, and those with a degree. Our country is also starting to set up its university diplomas and its research doctorates. The introduction of these new levels of higher education will call for adjustments with respect to what has been done up to the present time so that they can effectively meet the real needs of a world of work that is in continual evolution. We are taking this action so that university diplomas will be more closely related to local socioeconomic situations, and so that doctorates not only meet university research requirements but also produce scholars capable of managing complex research projects in industry, and in more general terms, tomorrow's economic and cultural elite.

[Kerbaker] Let us turn to the big companies. What do you think of the research and development being done by the Italian multinationals today?

[Colombo] This difficult time for the national and international economy is also having a negative effect on strategic industrial research in some of the major companies. It is known that several industrial research centers are going through difficulties. We find this very worrying because it is a sign of shortsightedness and inability to look at the long-term future. We are intervening with various measures to strengthen the support for industrial research but this will only be effective if companies realize that research plays a key role in their development and survival.

[Kerbaker] In recent years the major companies in our country have progressively gone back to their so-called core business. Do you think that this process toward specialization will have a positive influence on the companies' research activities?

[Colombo] The evolution of the environment outside the companies over the last 10 years has led to increased and more war-like competition, and therefore research policy has been concentrated on those activities that can rapidly offer a net competitive advantage.

In this respect the reduced emphasis on diversification, which is a result more of financial than of industrial behavioral logic, is to be viewed positively. However, these trends must not only be interpreted for their short-term effects. In fact, it should not be forgotten that, whilst remaining one of the specific missions of a company, the primary role of research is that of preparing the new processes and products that can assure the long-term continuity of the company.

The management of technology inside companies must therefore aim at providing an adequate balance between the defense of current products and preparing for future market needs.

[Kerbaker] What concrete initiatives are being studied at a government level to encourage companies to increase their research activities?

[Colombo] I can tell you the main measures we are preparing for industrial research. These include: streamlining the bureaucracy involved with obtaining applied research funding, reducing the time from between two and three years to between six and eight months; the launching of national research programs that have been decided on but not yet initiated; setting up new national programs aimed at socioeconomic goals of major importance for our country. We are also looking into the possibility of introducing automatic support measures, such as the partial defiscalization of research expenditure. If we are to bring industry up to the standard required to meet international competition we need to know about technological developments and must be capable of transforming research into innovations. Therefore we are promoting and reinforcing both public and private instruments to support technological outlets, information and support networks for industry (particularly for the small and medium-sized companies), and bring together research workers who are working in specific geographic areas.

[Kerbaker] Another topical subject, particularly abroad, is that of the science parks. How has their formation in Italy evolved?

[Colombo] I am convinced of the importance of science and technology parks. However, they should not be considered a way of bringing researchers together in one area. Instead, they should be regarded as an integrated system to satisfy the real demand and potential of those who are economically involved in a given area. The park must also be a focal point for demand, so that the research that is available does not become introspective and directed toward problems that may be important from a scientific point of view but have nothing to do with real productive needs and therefore with the development of the area.

[Kerbaker] In your capacity as minister how do you evaluate the Pirelli initiative for the creation of a technological pole in the Milan area of the Bicocca, where collaboration between the university and private companies has been created?

[Colombo] The Bicocca technological pole is one of the most valid examples of a more promising collaboration for technological innovation between universities and industry. The fact that the research and educational structures of the university, public organizations, and leading-edge companies are all located in the same vicinity, creates a situation that stimulates effective connections and interdependencies, and therefore the

development of a scientific and industrial system that has its roots in the most advanced area of the country.

Germany: Research Minister Calls For More R&D Innovation

AU1011110493 Munich SUEDEUTSCHE ZEITUNG in German 10 Nov 93 p 33

["froee"-signed report: "Krueger Calls For Innovation Wave"]

[Text] Bonn—FRG Research Minister Paul Krueger has called on the high-tech branches of industry to link up with the research efforts of the 1980's. "Germany needs an innovation offensive," the Christian Democratic Union politician said at the presentation of a report on the technological competitiveness of German industry in Bonn.

According to the ministry's calculations, the economic upswing in the 1980's was essentially supported by those industrial branches whose expenditures for research and development (R&D) exceed 3.5 percent of their turnover. In 1980-91, net production in these research-intensive industries rose by 3.4 percent per year, compared with 2.4 percent in the processing industry in general. The number of employees also increased more in these branches than on average in all branches. However, this development came to a standstill in 1992. Thus, net production in the R&D-intensive branches declined by 2.7 percent compared with 1991 and employment went down 3.1 percent. The decline was thus greater than in the not-so-research-intensive industrial branches (minus 0.2 percent and minus 1.9 percent respectively). This trend is continuing this year, Krueger said, being worried.

However, in 1992 the R&D-intensive branches still contributed almost 46 percent to the net output of the processing industry. Last year Germany, with an 11.5-percent share in world trade, continued to be in the international top group of suppliers of technology-intensive products, behind the United States (12 percent), but still ahead of Japan (9.1 percent).

In Krueger's view, the currently unsatisfactory situation of the R&D branches is not only due to the bad economic development. Responsible are also structural factors, such as Germany's abating dynamism in innovations compared with the United States and Japan. Thus, the number of registrations of German patents in machine-building or in electrical engineering has shown a below average increase. Even though Germany is among the few industrialized countries, which are represented with a complete range of competitive R&D-intensive products on the world market, products in which microelectronics plays a role are an exception. The traditional position is increasingly deteriorating, especially for producers of computers, communications equipment, office machines, and telecommunications products. Krueger also pointed out that Germany is one of the leaders, in

particular in fields of technology, which, like high-quality chemistry, are related only with very few fields of science. The FRG is represented below average where results from various scientific disciplines must be linked in order to develop new technologies—e.g. in biomedicine, in processing methods for new materials, or in software. In particular software is a very weak point, since its share in production costs is partly above 50 percent.

The research minister also wants to contribute to the research offensive that he demands. The goal must be to improve the cooperation of the affected people in industry and research, as well as to support strategic joint projects. Krueger also hopes that the strategy work group, in which industry and science participate, will provide stimuli. It could also be examined whether the Future Technologies Cabinet Committee should be reactivated. Since the chancellor, too, has come out in favor of increasing the research budget, Krueger expects a raise of his 1994 budget of 9.46 billion marks by about 100 million marks. The money is to go primarily to the new laender.

France: PUCE Electronics Program Increases Subsidies

BR1211134993 Paris *ELECTRONIQUE INTERNATIONAL* HEBDO in French 14 Oct 93 p 8

[Article by Didier Girault: "Microelectronics Support Stepped Up"]

[Text] From now on, exclusively electronics companies can benefit from the PUCE [Products Using Electronic Components] program even if they use only a PAL [programmable array logic] type network in their project (footnote 1) ("exclusively electronics companies" as opposed to companies in non-electronics sectors (the toy sector for example) which only use electronics to improve their products)

The Ministry of Industry has just made some adjustments to the conditions for participating in the PUCE program for companies in the electronics sector (footnote 2) (PUCE is a program drawn up by the public authorities in 1985 to help small and medium-sized companies improve the performance of their products by using microelectronics). These companies only represented 27 percent of PUCE projects in 1992, as against 40 percent in the 1984-1992 period. So whereas previously it was imperative that their projects include the manufacture of a specific circuit of the gate array or semi-custom type, it is now sufficient that they draw up a project using a "simple" programmable array logic (PAL, PLD [programmable logic devices], or FPGA [field programmable gate array]) to obtain the PUCE label. Another reform is that companies will no longer be considered as belonging to the electronics sector by their APE [main business activity] code alone, "a code which is all too easily exchanged". It will be necessary that "the base cost of the products which they are manufacturing

primarily consists of electronic components," according to the Ministry of Industry definition. Finally, the ministry's last change is the simplification of the classification of companies by their technological level (see table 1). Instead of the former six levels there are only five which only take into account the components used in the project and not, as before, the methods of assembling the components (CMS [surface-mounted components], etc.). These methods will now be evaluated by the expert in charge of the project in question. He can use these assembly methods to evaluate the technological progress represented by the project if the "components" element is not sufficiently clear. In all "expert opinion will be more important than it was before", according to the ministry. (Footnote 3) To give an expert opinion on the project, the DRIRE [regional industry, research and environment directorates] chooses, by agreement with the manufacturer, a third party (an electronics design company, an academic, an independent expert, etc.).

Classification of PUCE Products by Technological Level

To be accepted by PUCE, the projects proposed by the electronics companies must involve a move up to level 4

- Level 0: No electronics
- Level 1: Incorporation of discrete components (resistors)
- Level 2: Incorporation of 8- and 16-bit microprocessors and/or microcontrollers
- Level 3: Incorporation of 32-bit and/or RISC [reduced instruction set computer] microprocessors
- Level 4: Incorporation of programmable logic circuits and/or ASIC [application-specific integrated circuits]

More Electronics in Small Company Products

Moreover, the expert responsible for examining requests for subsidies will pay more attention to the commercial aspect of the project, "as all too often a very splendid equipment is developed which is too complex and therefore too expensive. It is preferable to have a better targeted product which finds its niche in the market."

In practice, the subsidies and reimbursable advances granted have not changed. Thus, during the "avalanche" phase, PUCE can grant a maximum of 100,000 French francs (Fr) in reimbursable advances to the development of the commercial part of the project (market research, training, etc.) during the "development" phase the program can allocate up to Fr250,000 in reimbursable advances to commercial development (looking for partnerships, taking part in shows, implementing advertising strategies, etc.).

Subsidies and Reimbursable Advances Granted to Small and Medium-Sized Firms as Part of the PUCF Program (maximum amounts)

The subsidies and reimbursable advances granted by the PUCF program to small and medium-sized firms amount to 50 percent of the project cost, provided that this expenditure does not exceed the ceilings indicated below.

1. Feasibility phase: Fr200,000 in subsidies (technical portion) or Fr100,000 in reimbursable advances (commercial portion).

2. Development phase: Fr750,000 in subsidies (technical portion) or Fr250,000 in reimbursable advances (commercial portion).

Finally, so as to "help small and medium-sized companies without experience to get a foot on the microelectronics ladder," the Ministry of Industry, together with the DRIRE, is setting up a pilot evaluation scheme to spot possibilities for implementing more electronics in products manufactured by small- and medium-sized industrial concerns. At the moment, small- and medium-sized mechanics companies are being contacted. Once such an evaluation has been decided upon, the company will choose an expert or, if it does not know any, will ask the DRIRE, which will be able to suggest one. "The ideal situation is to bring in an electronics research and design company which will subsequently be able to become the company's natural partner," specifies the Ministry of Industry. The expert's analysis should make it possible not only to single out, from the catalog of products, those functions where electronics could be used, but also to evaluate the cost and the advantages of using electronics. In practice, the experts' work is subsidized to the tune of 80 percent by the PUCF program up to the amount of Fr25,000; the remaining 20 percent is borne by the company.

Germany: Research Minister Supports 'Magnetic Levitation' Project

4UJ411215893 Dmpsc/dcc/HANDELSBLATT
in German [1 Nov 93 p 6]

[Title]-signed report: "Waiting for the Chancellor To Clarify the Issue".

[Text] Bonn—A critical letter from Finance Minister Theo Waigel concerning the controversial Transrapid magnetic levitation train has raised a storm in industry and the Bonn coalition. Research Minister Paul Krueger of the Christian Democratic Union (CDU) supports a swift decision on the construction of the magnetic levitation rail route and has warned of the danger of losing the technological advantage provided by Transrapid.

Speaking at an event organized by the German Transportation Forum, Krueger said he was optimistic about a start being made on the construction of a Transrapid trial street between Hamburg and Berlin in 1996-97

and its completion by the year 2002-03. The minister stressed that in technological terms, it was still five to 10 years ahead of the United States and Japan. He was supported by Horst Friedrich, FDP [Free Democratic Party] spokesman on transportation.

In his letter, Waigel particularly criticized the private sector's financial contribution to date. His research colleague Krueger has now made it clear that the company operating the route should be organized solely on private lines. This means that there should be no risk of costs being passed on to the state, which is also what is being said at the Transportation Ministry. FDP spokesman Friedrich told HANDELSBLATT that an operating company financed solely by the private sector was part of a coalition resolution that was put forward by the CDU and Christian Social Union under pressure from Waigel. Apparently, the scope of the operating company should be extended to take in the construction industry.

New figures regarding the March offer made by a consortium composed of Thyssen, Henschel, Siemens and Daimler-Benz—an offer rejected by the politicians as being insufficient—were not publicly announced in Bonn yesterday. It was unanimously agreed that a new offer should be submitted by the middle of December at the latest. In general, the figure of 15 billion German marks cited by the Finance Ministry regarding the costs of Transrapid to the state budget were rejected. Thyssen-Henschel told HANDELSBLATT that the private sector's aim was to produce a finance concept that would provide a basis for the private sector to carry out and operate a transportation project on such a large scale for the first time. The forecasts for passenger numbers are based on research commissioned by the transportation minister. They were ascertained using the methods and models that were also used for the Federal Transportation Routes Plan '92. Referring to the Federal Supreme Auditing Institute, Waigel cast doubt on the passenger numbers calculated by the industry. This criticism was also rejected by FDP spokesman Friedrich. In CDU-CSU circles, railroad reform has only temporarily been made a priority. A conversation with the chancellor leading to a decision is scheduled for Friday [13 November].

German Leaders Differ on Reforms for Large Research Institutes

94H50851 Dmpsc/dcc/HANDELSBLATT in German
5 Nov 93 p 6

[Article: "BDI President Calls for 'Innovation Offensive'." Subheadline: "Industry Willing to Join Government in Search for 'Right Topics'—Call for Reforms".]

[Text] Bonn, Thursday, 4 November 1993 (HANDELSBLATT)—The Federation of German Engineers (BDI) is intensifying its call for reforms of the Large Research Institutes (GLI). At the yearly meeting (yesterday) in Bonn of the Working Association for Large Research

Institutes [AGF]. BDI president, Tyll Necker, called on the federal research minister to quit controlling the topics. As a result of such control the GFE are too heavily focused on governmental demand for research.

Instead, Necker called for stronger and more timely participation of Industry in coming up with topics for the GFE through heavier use of industry advisory committees and boards of directors as well as roundtable talks between industry and large research on institutes and topics. The president of BDI clarified that this should not constitute any "pre-emptive decision making." In his view it means a stronger focus on application and innovation. BDI's president applauded the fact that nearly 30 percent of the 120 institutes were completely realigned in the 13 GFE of the former federal states by being split up, consolidated or reoriented. He went on to say: "But there still has been no great success in satisfying the closely inter-connected requirements better than at present." What is needed is a search for the right topics, more efficient use of resources and rapid conversion of research results into products. According to Necker, this will come about in the final analysis only through structural reforms.

BDI's president explained that the key to this is autonomy and competitiveness. As the basic ingredients, he recommended basic government financing, autonomy in application of resources and independent recourse to third party resources plus successful leadership participation. Third-party resources could enhance a decentralized topics search enabling the forgoing of a large share of centralized political standards.

Necker clarified that greater competitiveness required considerably expanded autonomy. The first step, therefore, would have to be deregulation and assurance of genuine financial and administrative autonomy of the GFE. There should also be personal autonomy, in this context, for the directors of institutes to be able to make themselves available wherever their advice is solicited, including industrial boards of directors.

To be sure, on the occasion of the GFE session, federal research minister, Paul Krueger (Christian Democratic Union [CDU]), called upon industry and academia to enter into a dialog with one another. Otherwise, his press report contained little about reform and much more about praise for the GFE. In Krueger's view, there already are in some centers initial, favorable instances of industry-GFE cooperation. Based on the GFEs' reorientation, over the long term the research centers would become even more competitive. Even at present, the 16 GFE and their approximately 20,000 employees, are one "of the most important implements for the advancement of science and technology." Krueger expressly emphasized that he deemed knowledge-oriented basic research to be both necessary and important. Consequently, basic research will continue to be supported even further at the current high level.

Joachim Treusch, AGF chairman, was the only one to confess that the search, coordination and implementation processes had to be improved and this had to be done quickly. But for it to be at the expense of Germany's highly-developed and internationally recognized basic research would lead to "virtually irremediable damage." It was precisely the Japanese who first initiated the race to catch up in basic research. This competition too would have to be withstood. In Treusch's words: "The springs are still gurgling. It is we ourselves who have to learn how to draw from them in a better way without depleting the groundwater in the process."

Germany: BMFT Funds R&D in Small, Medium-Sized Firms

MI2610104893 Bonn: TECHNOLOGIE-NACHRICHTEN
MANAGEMENT-INFORMATIONEN in German
20 Sep 93 p.8

[Text] Federal Research Minister Dr. Paul Krueger presented a new program for funding "Joint Research in Small and Medium-Sized Enterprises (SME's)" at the end of August. This new nationwide BMFT [Federal Ministry of Research and Technology] program would take the main strain of research funding in SME's, said the research minister. In order to maintain success in the technological race, which is becoming increasingly tough and complex, SME's would have to join forces more and more on research and development. The impetus came not so much from the desire to save costs as from the fact that many technologies could increasingly be mastered by SME's only if they joined up with other sectors. Moreover, the globalization of the markets would increase the significance of transnational cooperation for these firms too. The funding program's central concern was therefore to encourage SME's to join forces on research and development and to support them in this effort.

The wide variety to be found among German SME's makes for a highly differentiated joint research requirement. The new joint research program thus comprises a variety of options out of which the firms themselves can select the forms that suit them best.

The program revolves around joint projects between two or more firms, one or more of which can be funded, provided they meet the requisite conditions. The firms are free to involve research institutes in the projects as well. Even single firms working in conjunction with a research facility may be funded to a limited extent.

The second major approach to funding is to support what is dubbed "technology transfer by brainpower" and has proved highly effective. This is a scheme whereby firms can receive funding either to second their own research staff temporarily to a research facility or to host scientists from research institutes on their own premises.

A special funding bonus is envisaged for transnational R&D cooperation, which is usually very costly, though

full of future promise. Applicants from the new federal laender can be given special preferential funding, as they have considerable national and international ground to make up in a short time in their involvement in joint projects.

Overall, applicants from the original federal laender can receive up to 700,000 German marks [DM] in funding under the new joint research funding program, and applicants from the new laender up to DM800,000. The program, to which a budget of approximately DM200 million has been allocated through 1997 alone, began on 1 September 1993. Applications may be submitted up to 30 June 1998, private enterprises with up to 500 employees being eligible to apply.

Further information on and applications for the BMFT joint research program may be obtained from:

- The BMFT, Berlin Regional Headquarters, Dept. 126, P.O. Box 61 02 47, 10923 Berlin, tel. 030/39981-218, fax 030/39981-270, or
- The Federation of Industrial Research Associations, Berlin Regional Headquarters, Tschaikowski-Str. 49, 13156 Berlin, tel. 030/482-6649, fax 030/482-4366.

Germany: German Research Society Supports Special Research Projects

MI2610105293 Bonn *TECHNOLOGIE-NACHRICHTEN*
MANAGEMENT-INFORMATIONEN in German
20 Sep 93 pp 13-14

[Text] The German Research Society inaugurated five new special research projects on 1 July. Two are in the engineering sciences and three in biology and medicine.

The "Situating Artificial Communicators" project at the University of Bielefeld primarily brings together linguists from the Faculty of Linguistics and computer scientists from the Technical Faculty. Their work centers on formal systems capable of reconstructing relevant aspects of the behavior of natural communicators. The concept is based on the idea that mechanical systems could take on the role of human communicators in certain interactions coordinated via natural speech. They aim to create additional basic structures that will make for man-machine communication in natural speech.

Scientists from the departments of mechanical engineering, sheet metal working, metallography, production engineering, materials science, and ferrous metallurgy at the Technical University of Clausthal and the University of Hannover will be working on "Manufacturing in Thin Sheet Steel." Their goal is to investigate and interpret the basic principles underlying the materials and process-engineering phenomena involved in shaping and joining thin sheet steel and to describe the consequences that they have on selected component properties. It is

expected that, in the long term, these studies of combined shaping and welding processes, and the resulting advances in sheet steel engineering techniques, will bring in their wake novel design solutions and new products for a variety of areas of application. From the research policy point of view, this project has significant economic and ecological development aspects. Sheet steel is produced on a very large scale in Germany, and the number of potential future applications is still increasing.

The second new special engineering science project is being carried out at the Technical University of Munich, where scientists from the mechanical and electrical engineering departments are working together on the development of an environment-friendly combined internal combustion and electric engine. Their work on a system-oriented improvement of the drive process to obtain maximum primary energy savings goes under the title "Environment-Friendly Motive Power Engineering for Motor Vehicles." The requisite electrical power will be supplied within the vehicle itself, which will store the excess energy generated by the internal combustion engine and exploit the energy released on braking.

A new special biology research project entitled "Molecular Ecology of Plants: Substance Extraction, Membrane Transport, and Regulation of Consumption" will be carried out at Darmstadt College of Technology. Scientists from Darmstadt College of Technology, Frankfurt University, Heidelberg University, and the Lochmuehle branch of the Senckenberg Research Institute will be taking part. They will study various subsidiary processes involved in the overall metabolism of plants with a view to obtaining a complete understanding of their ecophysiological adaptation strategies and mechanisms at various levels of complexity.

There will be two new special research projects in the medical field. Clinicians and theorists from the internal medicine, microbiology, immunology, human genetics, molecular genetics, molecular biology, pathology, virology, endocrinology, and biochemistry departments of Luebeck Medical University and the Borstel Research Institute will be studying "Molecular Mechanisms of Inflammatory and Degenerative Processes." Their brief is to investigate molecular defects in collagen disease, the molecular principles of infections, and the significance of cytokinins in the triggering and modulation of these pathological phenomena.

Theorist and clinical teams from the Faculty of Medicine and Biology at the University of Freiburg are working with scientists from the Max Planck Institute of Immune Biology in Freiburg and Freiburg Tumor Biology Clinic on developing new tumor therapy approaches under the special research project entitled "Molecular and Cellular Principles of Tumor Therapy." As no further qualitative progress has been achieved in "traditional" methods of treating tumors, i.e., surgery, radiation therapy, and chemotherapy, over the last few years, new paths must be explored. These include the analysis and therapeutic

exploration of the body's own defense mechanisms against tumoral illness in the light of new findings in immune biology and molecular biology. Basic cytobiology, experimental hematology, molecular biology, and immune biology research over the last few years has made considerable strides forward in knowledge, with the result that it looks increasingly possible to deploy the body's own defense mechanisms in the battle against tumors. The project's brief is to test and develop this targeted application of these new findings, and also to verify the efficacy of treatments produced by genetic engineering methods.

Netherlands: Editorial Comments Andriessen's Research Tax Incentive

BR2910140093 Rijswijk POLYTECHNISCH
WEEKBLAD in Dutch 24 Sep 93 p 3

[Unattributed editorial: "Research via the Wallet"]

[Text] Minister of Economic Affairs Andriessen has at last got his own way with his new regulation for the fiscal deduction of R&D costs. The minister had wanted to introduce the tax deduction earlier, but because of cutbacks, he has had to wait for the right moment.

With the "fiscal R&D facility," Andriessen has met a fervent wish from the business world and the employers' organization. In these circles there is still dissatisfaction over the abolishing in 1991 of the successful INSTIR (Innovation Stimulation Regulation).

It is not the first time that the government has seized on favorable tax provisions in order to encourage investment. Exactly two years ago, the Regulation for Advance Depreciation of Environmental Investment (VAMIL) came into being. Despite high expectations, the business world has not yet fully discovered the possibilities contained in VAMIL. Last year, only 140 million were used out of the 500 million Dutch guilders available for environmental investment.

Andriessen does not intend to make the same mistake with the new regulation. If the amount available is not drawn on fully, then the reduction of income tax for research personnel will rise to a maximum of 20 percent. That is of course very nice for individual companies, but the question is whether the total Netherlands economy will benefit very much from it. It is after all the intention that as many firms as possible will undertake research and development in order to provide more job possibilities and to boost economic growth.

Nevertheless, the new R&D facility will definitely provide a new stimulus for small- and medium-sized firms. These happen to have few possibilities for undertaking in-house research. In addition, these companies are not required to cooperate with competitors, as is the case with national or European technology programs. This obligatory pooling of know-how often has an opposite effect.

Netherlands: Government Reduces Employers Taxes on Researcher Salaries

BR2910150293 Rijswijk POLYTECHNISCH
WEEKBLAD in Dutch 24 Sep 93 p 1

[Article by Bart Stam: "Andriessen Carries Plan Through: As of 1994 Companies To Be Allowed To Deduct Research Expenses"]

[Text] The Hague—Minister of Economic Affairs Andriessen has managed to win his colleagues in the cabinet over to his idea to lower employers' taxes for R&D staff. In the 1994 budget, he is to put aside 210 million Dutch guilders to encourage small- and medium-sized enterprises, in particular, to spend more money on research and development. In the coming years, some 350 million guilders is being made available for this "R&D facility."

Lowering of employers' taxes on wages for research staff is a measure that minister Andriessen had wanted to introduce sooner, but the large-scale government cutbacks, which were announced in the spring budget, caused a delay. In August, Andriessen presented the plan again to the Council of Ministers, after which the other government members gave their agreement. Andriessen has in the meantime sent the new regulation to the Council of State for urgent recommendation. The minister wants the new regulation to come into effect as soon as possible after 1 January 1994.

"The backward position of the Netherlands in the area of R&D is a matter of concern to me," said minister Andriessen when giving an explanation of his budget. He drew attention to the fact that in the Netherlands, government funding for R&D had dropped by 7.7 percent between 1990 and 1993.

In countries such as Sweden, Switzerland, Germany, and France, there has been an increase in research funding during the same period. "It has therefore been decided to grant companies which take on R&D staff a 12.5-percent tax reduction on R&D wage costs." The measure is intended for all business sectors, including agriculture and business services.

If the number of companies applying for the tax allowance remains below expectations in 1994, Minister Andriessen is considering to increase it to 20 percent per employee. However, if there are too many applicants, it may be decreased. The maximum tax allowance to be granted to any company is 10 million guilders.

Minister Andriessen further added that he is not worried about fraud. Guarantees are included which will ensure that companies cannot declare employees who are not involved in technical or scientific research. Senter, the administrative organization for technology policy, has strictly defined the meaning of "research and development." In addition, companies will have to provide an accountant's certificate with their tax declaration form.

Andriessen further noted that even companies which contract out all or part of their research can make use of the new facility. A condition is that this should only be to Netherlands companies or research institutes.

R&D Investments Drop

The Union of Netherlands Businesses (VNO) is pleased about the announced reduction in research costs for companies. The employers' organization is deeply concerned, just like Minister Andriessen, about the drop in R&D investment. The VNO expects positive developments for the job opportunities and for export. "Fiscal incentives for research are very important, in particular for small and medium-sized enterprises which need to modernize in the technological field."

In addition to providing the income tax allowance, minister Andriessen has proposed that the PBTS (Company-Oriented Technology Stimulation Program) should be changed as from the beginning of next year. The demonstration projects will no longer be awarded via open application, the so-called tendering system. "The demonstration of technology requires activities which are tailored to the target group, for which an open tender is not the ideal solution." A special regulation for information technology will be introduced in which PBTS projects and pilot data communications projects will be integrated.

At the beginning of next year, the minister of economic affairs would like to see a number of new IOP's (Innovation-Oriented Research Programs) get under way. IOP's are intended to pool together the knowledge of universities, research institutes, and companies in selected fields of study. The business world will be able to make a strong contribution to the final choice of subject matter for these IOP's. Economic Affairs also wants to set up new research colleges next year.

Netherlands: Large Concerns Minimally Affected by Research Subsidy Cuts

BR2910151493 Rijswijk POLYTECHNISCH
WEEKBLAD in Dutch 24 Sep 93 p 3

[Unattributed article: "Large Concerns Minimally Affected by Fluctuation in R&D Subsidies—What Is the Impact of the State Budget on Research?"]

[Text] The larger Netherlands concerns, which together account for about three-quarters of R&D spending, are relatively immune to changes in technology expenditure by the government. A small investigation reveals that government subsidies represent only a fraction of total research and development investments of multinational companies.

Over the past year (1993 budget), government technology expenditure has dropped sharply. The contribution from the Ministry of Economic Affairs, which coordinates technology policy, has fallen from 1.75 to 1.4 billion Dutch guilders. Still, large concerns in the

Netherlands appear so far to have suffered few restrictions from the downward spiral in government R&D expenditure.

The Hoogovens [Blast Furnaces] steel concern expects this year to invest about 100 million guilders in research and development. The steel concern has made use for some time of the national PBTS [Company-Oriented Technology Stimulation Program], but it is focusing mainly on European collaboration projects. It has so far received contributions from PBTS funds toward, for instance, the development of a thermoplastic metal-plastic combination for the bonnet of private cars. This project has resulted in Hylite, an aluminum-plastic-aluminum laminate. Other examples of PBTS projects in which Hoogovens is involved are the deep stretching of thermally galvanized steel for tires, the separation of aluminum waste via a whirling current technique, and the development of a biological desulfurization technique.

Hoogovens

The Hoogovens R&D projects have, as a rule, a duration of several years. The influence of the national budget on their ongoing research work is therefore usually limited. Because of the high costs of research, Hoogovens often resorts to collaboration with foreign (steel) companies. In addition, Hoogovens regularly applies for European research programs. One example is the development of an electrofoil with the support of European Coal and Steel Community, for which a production line began operations in Belgium in May.

Small Share at DSM

For the chemical concern DSM [Dutch State Mines] as well, the government's technology subsidies are not of decisive importance in the continuation of research projects. According to spokesman J. Bruning, "with 1,600 research personnel, we are one of the largest research institutes in the Netherlands. It is of course a good thing that the Netherlands government supports corporate research and development. But 10 million guilders, which is the maximum contribution we are allowed to receive each year, is a relatively small part of the total budget which DSM sets aside for research." Last year the chemical company allocated about 425 million guilders for research and development worldwide.

Netherlands: Editorial Reviews Andriessen's Research Tax Incentive

BR2910152993 Rijswijk POLYTECHNISCH
WEEKBLAD in Dutch 24 Sep 93 p 3

[Unattributed editorial: "Research via the Wallet"]

[Text] Minister of Economic Affairs Andriessen has at last got his own way with his new regulation for the fiscal deduction of R&D costs. The minister had wanted to

introduce the tax deduction earlier, but because of cutbacks, he has had to wait for the right moment.

With the "fiscal R&D facility," Andriessen has met a fervent wish from the business world and the employers' organization. In these circles there is still dissatisfaction over the abolishing in 1991 of the successful INSTIR (Innovation Stimulation Regulation).

It is not the first time that the government has seized on favorable tax provisions in order to encourage investment. Exactly two years ago, the Regulation for Advance Depreciation of Environmental Investment (VAMIL) came into being. Despite high expectations, the business world has not yet fully discovered the possibilities contained in VAMIL. Last year, only 140 million were used out of the 500 million Dutch guilders available for environmental investment.

Andriessen does not intend to make the same mistake with the new regulation. If the amount available is not drawn on fully, then the reduction of income tax for research personnel will rise to a maximum of 20 percent. That is of course very nice for individual companies, but the question is whether the total Netherlands economy will benefit very much from it. It is after all the intention that as many firms as possible will undertake research and development in order to provide more job possibilities and to boost economic growth.

Nevertheless, the new R&D facility will definitely provide a new stimulus for small and medium-sized firms. These happen to have few possibilities for undertaking in-house research. In addition, these companies are not required to cooperate with competitors, as is the case with national or European technology programs. This obligatory pooling of know-how often has an opposite effect.

Netherlands: 1994 Technology Budgets Summarized

BR0211142993 Rijswijk POLYTECHNISCH WEEKBLAD in Dutch 24 Sep 93 p 3

[Text] The Hague—Billions [of Dutch guilders] more for infrastructure, less for energy saving, more attention to attract students to technical courses, and finally less money for technology. Those are the positive and the negative points of the budget which was submitted last week.

Across the board, the Netherlands ministries will provide less money for technology during the coming year. The Ministry of Economic Affairs, which coordinates technology policy, is settling for considerably less, from 1.3814 billion Dutch guilders to 1.2906 billion [decimal points as published]. The Ministry of Education and Science is a positive exception, having increased its expenditure for technology from 427 to 468.8 million guilders. However, contributions from the Ministries of Housing, Regional Development, and the Environment and of Transport and Public Works have dropped from

181 to 166.5 million guilders and from 197.6 to 180.3 million guilders, respectively. This decrease is partly due to the fact that the technical budget for energy saving has gone down by 50 million guilders to 305.5 million. Big reductions are also to be seen at the Ministry of Agriculture, Nature Conservation, and Fisheries (from 430.4 to 408.7 million guilders) and the Ministry of Welfare, Health, and Cultural Affairs (from 67.9 to 42 million guilders).

Environmental Policy Plan

There is no shortage of concrete plans. For the Ministries of Housing, Regional Planning, and the Environment; Transport and Public Works; and Economic Affairs; the most important document will be the Second National Environmental Policy Plan (NMP II), which will be published at the end of this year. Minister Alders [Housing, Regional Planning, and Environment] claims that he has reached all the environmental targets specified and that he is on schedule for the rest of this century.

According to Andriessen [minister of economic affairs] technology is essential to achieve environmental objectives in some 60 to 70 percent of all cases. In addition, environmental technology should contribute to economic growth. This interpretation of environmental technology is attractively called the "clean motor" of our economy.

In the agricultural sector, which is very restless at the present time, acidification, manuring, and muck spreading have decreased, despite the rise in productivity. These were the central subjects of the first environmental policy plan. The agricultural sector now wants that environmental investments be made tax-deductible.

Extra Support for Students of Higher Education

The budget of the Ministry of Education and Science was leaked some weeks ago and provided little news on Budget Day. With respect to its contents, no large-scale projects are to be expected in the area of technical education. For institutes providing higher technical education, a regulation with a maximum length of five years will be implemented. The reception and guidance of students in secondary schools will be optimized prior to or in the beginning stages of the course with a view to improve efficiency. Advanced technical training colleges are authorized to develop their own solutions to transitional problems. However, they are not allowed to extend the duration of courses or to apply for additional resources.

France: Research, Industry Ministries Increase 1994 Research Budget

BR2910160093 Paris ELECTRONIQUE INTERNATIONAL HEBDO in French 30 Sep 93 p 11

[Article signed D.G.: "1994 Budgets—Industrial Research Is Looking Good"]

[Text] The budgets of the Research and Industry Ministries will not be cut in 1994.

During his ministry's 1994 budget news conference, Minister for Higher Education and Research Francois Fillon stressed that industrial research forms one of the government's priorities, together with civil aeronautics and the environment. Credit payments for ADEME [Workshop for the Development of Computer and Networking Sciences in Education] went up by 20 percent to 148.4 million French francs [Fr]. Credit payments destined mainly toward initiatives supporting small- and medium-sized companies and industries (SME-SMI's) (ANVAR [National Agency for the Implementation of Research] and technology dissemination) have increased by 23.4 percent (credit payments for ANVAR alone have increased by 16 percent to Fr1 billion). The CEA [Atomic Energy Agency] benefits from a budget of Fr780 million, an increase of 5.4 percent compared to 1993. The Research Ministry's total 1994 budget for civil research and development amounts to Fr51.6 billion (ordinary expenditures and credit payments), an increase of 3.7 percent compared to 1993.

The total credit payments for industrial research [provided for by the Ministry of Research] are allocated to the research and technology funds (Fr642 million); civil aeronautics (a priority with Fr2.113 billion); the space sector (Fr7.8 billion for CNES [National Center for Space Research], whose credits payments have been transferred to industry); and the credit payments provided for in the industry budget (Fr3.658 billion).

The Ministry of Industry, for its part, has also increased credit payments in support of industrial research from Fr3.4 billion to Fr3.7 billion. The ministry has placed priority on reinforcing industry and assisting businesses in difficulty. Credits dedicated to reconversion and regional industrial development will increase by over seven percent compared to 1993, exceeding the Fr1 billion mark. This will enable small and medium-sized companies to benefit from 20-percent state investment thanks to a new investment fund containing Fr600 million of credit payments. As for public companies, they will be granted an additional Fr5 billion in capital increases, which will be added to the Fr16 billion allocated in 1993 (Fr8 billion from the budget and Fr8 billion from the Balladur loan).

The tax allowance for research remains in place, amounting to Fr4 billion in forfeited tax revenues

Germany: German Trust Agency Plans Construction of Research Center

MI0311162493 Bonn DIE WELT in German 18 Oct 93 p 14

[Text] Who will pay? Trust Agency director Klaus Schucht does not yet know. However, "to counteract the withering-away of eastern German industrial research," the privatization agency plans to establish a research institute in the Halle-Merseburg chemicals region,

employing between 250 and 300 engineers and scientists from the major chemical companies.

Around four-fifths of them have lost their jobs since 1990, as separate privatization of different business areas has made centralized company-based research unviable. Research is now taking place only at parent companies, which usually are in western Germany. However, a new institute could provide a pool of creative potential, which would be available to local medium-sized firms for applied research activities. According to Schucht, major western German chemical companies have expressed their agreement to these eastern German plans.

The institute, which could also be run either as a foundation or as a technology management company, will not be limited to contract work. "Recycling research will be the core of its work" states Volkhard Uhlig, manager of the Eastern Chemicals Association (VCI-East). This will not mean starting from zero.

At Leuna, the possible site of the new research center, a team of experts has for two years been considering plans for a chemical processing center, where used plastics and other waste materials which until now have ended up on a specialized waste dump could be converted back into their original states using a thus far unprecedented combination of processes. On paper, such a project for producing chemicals from waste has long been viable. However, Leuna chemical engineers' hopes of building the reprocessing plant in their own factory have all but failed.

The Trust Agency favors several smaller factories, and has now earmarked the Zeitz hydrogenation plant for the plastics hydrogenation components of the project. Instead of [focusing on new] applications, Leuna will take over additional processing research. According to Uhlig, head of the association, it would be conceivable for the Leuna crackers, which the Trust Agency has decided will cease operation in 1994, to continue to be used as a pilot plant.

Uhlig states that recycling research can be funded by the government, which would be one way of financing the planned institute. He agrees with Schucht, of the Trust Agency, that "the entire project will eventually have to be viable on a private commercial basis."

Belgium: Flanders Science Budget Increases by 10 Percent

BR0511114393 Brussels KNACK in Dutch 20-26 Oct 93 p 50

[Article by Dirk Draulans: "Money for Thought: Flanders To Set Aside More Money Next Year for Basic Scientific Research"]

[Text] Is a wind of change at last blowing through Flanders' science policy? It most certainly is. In his Policy Statement for 1994 on the subject of a science

policy for Flanders. Luc Van den Brande (CVP [Christian Democratic party]), chairman of the Flemish regional government—who also has responsibility for science policy—announced that the funds for scientific research are once again being raised by a significant amount. Following protest campaigns by anxious researchers, who last year even held a demonstration, the amount of 25.5 billion Belgian francs (BFr) allocated in 1992 was raised to BFr28.9 billion in 1993.

Skeptics who thought that that would be all now see how wrong they were. The 1994 science budget has been set at BFr31.6 billion—an 10-percent increase for two years in a row, which is very laudable. However, we should bear in mind that there is still quite a distance to go because, in comparison with other countries, Flanders is still investing 50 percent less in scientific research. However, the fact that additional funding could be released in a time of recession and cutbacks indicates that at least some policy makers understand that something has to be done about this.

The resources being made available for research and development [as opposed to basic research] are also being increased by about 10 percent, from BFr12.2 to BFr13.5 billion. The other sections include academic training (BFr16.7 billion in 1994) and the provision of scientific-technological services (BFr1.4 billion).

Master's Degree Scholarships

One aspect to which particular attention is being paid is the investment in non-specific (or basic) research. Since the Nobel Prizes for Medicine, for instance, are invariably awarded to basic (almost biological) research, no one can deny the value of well-planned basic research. The funds available for this item rise in 1994 by 286 million to almost BFr3.7 billion. A rise which does not quite reach the 10-percent average, but still is significantly higher than the increase in the cost-of-living index. The increase was not taken away from the scientific categories in the science budget, but from the economic ones, such as the funds for support to business.

Industry, however, does not need to worry about this because it still receives more than BFr3.7 billion in research subsidies, i.e. a 10-percent increase. However, this amount includes investments to be spread over several years.

In the policy note, several initiatives are explained, including that of the controversial Master's degree scholarships from the (virtually defunct) Institute for the Encouragement of Scientific Research in Industry and Agriculture (IWONL). The responsibility for this is to be given to the Flemish IWT [the Institute for Scientific Technological Research in Industry] (we will spare you the story behind this acronym). The principle that the decision over the scholarship is made following a justification from the candidate remains. There is more. In addition to the indexing of the 247 million for 1993 to 258 million for 1994, an extra BFr51.5 million will be

granted. In total, subsidies for research scholarships have gone up by one-quarter, to BFr310 million. The aim of this increase is to:

1. Bring the amount of a scholarship grant up to the same level as the salary for an assistant;
2. Change scholarship terms from three (sometimes four) consecutive periods of one year each, to two periods of two years each;
3. Create an estimated 20 to 30 additional research positions.

The rather more elite National Foundation for Scientific Research (NFWO) and its associated organizations are also to receive 114 million extra (total: BFr12.66 billion). A further BFr107 million could come on top of that if the NFWO succeeds in transferring 10 of its "permanent" researchers to other research facilities. This year five researchers have been "dismissed" because of non-productivity. Even within the inflexible NFWO, a fresh breeze is slowly beginning to blow.

It will also be interesting to follow the attempts to coordinate policy-supporting research (in 1994 valued at 1.3 billion) and, as is stated in the policy note, to take measures guaranteeing that only high-quality projects will be selected. Or, in other words, People are becoming tired of the fact that government research contracts are frequently slipped in an underhand manner into "friendly" channels without employing any scientific criterion at all. The streamlining of science policy management structures also includes the issuing of a Flemish science policy decree and the setting up in each university of a Special University Research Fund. This is to ensure that the universities, both nationally and within the scope of European initiatives, will coordinate their activities. More attention than before will also be given to the evaluation of scientific work—important to discover the areas in which our country is most capable, and to campaigns to increase scientific awareness.

In short, the government has considerably raised its scientific research standard. The question now is whether it will be able to maintain this standard year after year.

CORPORATE ALLIANCES

Germany: Future of International Trade Fairs Debated

937W50578B Frankfurt/Main FRANKFURTER ZEITUNG/BLICK DURCH DIE WIRTSCHAFT in German 23 Jun 93 p. 1

[Article by Juliane Stiege: "New Chances for Fairs in East European Countries: Cooperation With German Fair Enterprises"]

[Text] The fact that the Leipzig fair after the four years has lost its international leading position as an East-West

trade center, is only indirectly a result of the political changes. The first reason is that the fair—certainly from political considerations—had been organized strictly on the completely outdated concept of a universal fair. Therefore the market-oriented fair administration, active only since 1991, could not start off on a new beginning with any preestablished industrial fair program.

However, the exhibitors from the former socialist states, which as quickly as possible wish to join in with the international market economy, are making their appearance at the large international branch industrial fairs in the West. It is reported from the fairs at Duesseldorf, Hannover, Cologne and Munich, as well as those in Berlin, Frankfurt and Nuremberg, that there will be a marked increase in the space for exhibitors who are visitors from these countries. There is no longer a special East-West trade which can take place within the framework of an all-inclusive fair. It will instead be developed as a part of overall international trade through the individual branch markets at the industrial fairs. However, parallel with this there also must be development and stabilization of the internal market. A functioning regional and supraregional fair and exhibition system may play a significant role in this.

The prerequisites for this are present. The international fairs in Poznan, Brno, Bratislava, Budapest, Plovdiv and Bucharest dating from the times of a planned economy and state trade already before 1990 in addition to an all-inclusive investment and consumer's goods fair at the same time organized a few industrial fairs. In the Soviet Union at that time only industrial fairs were conducted, for which, however, special rules applied. However, their new task, bringing supply and demand together under market conditions, often causes these enterprises difficulties. In mutual interest Western fair organizers have jumped in as helpers.

Thus the foreign subsidiary of the Duesseldorf fair enterprise Nowea International is now concentrating its involvement in the former Soviet Union on Moscow and Kiev and at the same time is intensifying it and for this purpose is organizing a series of industrial fairs in one of the new fair halls which it has constructed in Warsaw. The Munich fair with its Imag foreign fair subsidiary taking into account the needs of the industrial region there, has organized investment and consumer's goods fairs in Novosibirsk, is already involved in the traditional fair in Poznan and is striving for closer cooperation with the Brno fair. The Hamburg fair is going with their own management setup to St. Petersburg and to the revived Prague fair site and the Vienna fair has founded a joint subsidiary with colleagues in Budapest.

Similarly as in past years, in the new federal lands businessmen from the East and West view the holding of fairs as a profitable line of business and are flooding potential exhibitors with program announcements.

Whoever would successfully exploit the regional markets in the formerly socialist countries must therefore precisely inform themselves:

- whether and when at the fair site the same or similar offerings will be made;
- whether it is a matter of a fair being held for the first time or whether certified figures are available concerning a previous holding of the fair;
- whether the organizer can provide references with respect to pertinent experiences;
- in what form and with which target groups will the publicity advertising for visitors be conducted.

Matra, British Aerospace Discussing Mergers

94W.S0081C Paris AFP SCIENCES in French
23 Sep 93 p 15

[Article: "Satellites: Matra Marconi Space Resumes Negotiations With British Aerospace"]

[Text] Paris—About a month ago Matra Marconi Space (MMS) resumed negotiations with British Aerospace (BAE) on a merger of the two groups' satellite operations, a spokesman for Matra-Hachette, which controls 51 percent of MMS (GEC has 45 percent), indicated on 21 September.

Similarly, since last May Matra has been engaging in other talks with BAE on closer cooperation in the missiles field. "We are making good progress" in this sector, the spokesman indicated, according to whom "the merger of the operations of the two groups into a joint company could materialize by the first half of 1994."

The talks on satellites initiated in 1991 were suspended last year since the British group wanted to complete a review of its space operations. The dialogue involves a takeover of BAE operations by MMS.

MMS, which had a sales volume of Fr5.6 billion in 1992, and BAE (a sales volume of 120 million pounds or Fr1.3 billion) already have an economic interest group in common, Eurostar, which specializes in satellite platforms.

CORPORATE STRATEGIES

Oxford Molecular Buys Biostructure

94WS0036B Paris L'USINE NOUVELLE in French
9 Sep 93 p 74

[Article by Thierry Lucas: "A New Molecular CAD [Computer-Aided Design] Pole: Oxford Molecular Buys Biostructure"—first paragraph is L'USINE NOUVELLE introduction]

[Text] The British company adds to its software offer for drug manufacturing

Computerized molecule modeling has become an indispensable pharmaceutical research tool. By buying the troubled Strasbourg company Biostructure (close to 10 million francs [Fr] in sales), the British company Oxford Molecular (43 employees) becomes the largest European player on this market.

This new molecular CAD pole will be based in Great Britain and is expected to achieve sales of about Fr20 million in 1993. At the same time, Oxford Molecular enriches its software catalog; in a few months from now, it will be in a position to offer an integrated set of tools to develop new drugs.

Actually, the British firm intends to make maximum use of synergism between the two companies. At Biostructure, the two leading products are Pro-Explore, used to build proteins, and Pro-Simulate, a molecular-dynamics program that performs macromolecular energy calculations. Oxford Molecular plans to interface these two with its own software programs: Iditis, a relational database providing all the characteristics of proteins, and ABM [job creation program], a unique tool dedicated to antibody modeling.

The technical contribution of Biostructure also includes software user-friendliness. Actually, the French company devoted considerable care to its software graphic interfaces. This aspect was rather neglected by the British company, whose catalog still includes some highly sophisticated tools developed by universities, and not very user-friendly... This deficiency will be corrected during 1994, when the interface developed by Biostructure will be added to most software programs. After which Oxford Molecular plans to sell Fr60 million's worth of modeling software by 1995.

French Electronic Sales Up

94WS0035A Paris L'USINE NOUVELLE in French
9 Sep 93 p 34

[Article by Jean-Pierre Jolivet: "Electronics: Recovery Confirmed"]

[Text] The French electronics industry is again consuming chips. Sales have resumed and should achieve 13-percent growth in 1993. Although recovery was slower and came later than in the United States and other European countries, it is confirmed. July orders promise a good second half-year.

"Semiconductors are an early indicator of economic recovery. To overcome the crisis successfully, many manufacturers invest in high technology, which is a factor of competitiveness or a selling point. This is especially true in the microcomputer business and the automobile industry," according to Jean-Philippe Dauvin, economist at SGS-Thomson and also chairman of the WSTS, the world semiconductor trade statistics organization

Yet, prospects by sector are uneven. Microcomputers, telecommunications, transportation and the automobile industry are currently driving the semiconductor market. "Many companies that import and assemble microcomputers dope their models with additional memory chips," Bernard Nomblot, sales manager at Tekelec Airtronic, observed. Falling prices, which drive the demand, do the rest.

Telecommunications are experiencing a boom in mobile communications and benefit from export contracts awarded to French manufacturers. The same is true of the transportation sector. "In the automobile industry, chip consumption was sustained despite falling car production figures, because new models have a far greater electronic content. But year-end results are still in doubt," Daniel Hoste, sales manager at Motorola Semiconductors, analyzed.

On the other hand, chip consumption in the arms and industrial goods sectors is still at a low point, reflecting military budget cuts and the freeze of corporate industrial investments. The consumer electronics sector, for its part, is stirring. Manufacturers are building up their inventories in anticipation of year-end sales.

Faced with a steady demand, semiconductor producers are beginning to experience difficulties in delivering. So much so that lead times are getting longer. Should it get worse, this situation might penalize French manufacturers, who overcame the crisis later than their American or European competitors.

Germany: SAP's Turnover Up in First Half of 1993

94WS0035B Paris L'USINE NOUVELLE in French
9 Sep 93 p 54

[Unattributed article: "Semiconductors: New French Disguised Advances to Siemens"]

[Text] Gerard Longuet seized the opportunity. At the inauguration of the SGS-Thomson semiconductor plant, at Crolles near Grenoble, he relaunched the idea of European cooperation in the chip sector, a disguised advance to Siemens. He took this initiative at a time when SGS-Thomson is again operating in the black and gaining market shares, when Philips is developing its cooperation with the French-Italian manufacturer, and when Siemens is still struggling with losses in the semiconductor sector. The subject will be the focus of the meeting between Gerard Longuet and Heinrich von Pierer, some time in September.

France: Second Phase of SGS Thomson Recapitalization

BR1011165793 Chichester INTERNATIONAL
TELECOMMUNICATIONS INTELLIGENCE
in English 18 Oct 93 p 20

[Unattributed article: "Second Phase of SGS Thomson Recapitalization"]

[Text] The French and Italian governments finally cleared cheques for \$125 million each as the second phase of a \$500 million recapitalisation of SGS Thomson Microelectronics. For the French management of the company, the past six months have been a period of uncertainty following the election of a conservative government committed to the privatisation of state-owned technology firms. However, an intensive lobbying programme succeeded in impressing Telecommunications and Industry Minister Gerard Longuet of the strategic significance of the company's advanced products.

The semiconductor firm has close affiliation with France Telecom and its research and development arm Centre National d'Etudes des Telecommunications (CNET) and has only recently opened a combined research and production facility at Crolles in south-eastern France (see ITI Issue 393). Together, STM and CNET are developing a range of circuits for application in broadband and wireless communications. These include devices for video telephony and asynchronous transfer mode (ATM) switching and terminal interfaces, and for GSM, DECT and other European standard mobile communications systems.

The French shareholding in the company is vested in a group known as FT2CI which includes CEA Industries, France Telecom and Thomson CSF. The Italian shares are held by IRI Group and the Comitato per l'Intervento nella SIR. British electronics and recording group, Thorn EMI, also owns a 10 percent interest in the company, acquired in exchange for UK semiconductor firm Immos Ltd.

France: Government Increases Bull's Capital Before Privatization

BR0511103093 Amsterdam COMPUTABLE in Dutch
29 Oct 93 p 1

[Article signed MU: "Yet More Cash for Bull"]

[Text] Paris—In order to prepare the insolvent Bull company for privatization, the French Government has given the concern yet another capital injection, this time amounting to 8.6 billion French francs [Fr] (about 3 billion Dutch guilders). Most important of all is the fact that Jean-Marie Descarpentries has been appointed chairman of the board. He succeeds Bernard Pache, chairman for barely a year, and has been given "a completely free hand" to put the company "into a fit condition as quickly as possible" for the transfer to private investors, according to Industry Minister Gerard Longuet.

This latest handout of capital to the French state-owned company has been received with mixed feelings. For a long time, it had not been certain whether such a step would receive EC Commission approval. Spokesmen from competing businesses find it "regrettable." As one of them put it: "Our company makes a profit without government assistance and, what is more, it pays huge

taxes in France. It is hard to accept that part of that money is being used to keep Bull on its feet."

Of the Fr8.6 billion being injected into the company, Fr7 billion is coming directly from the government. The remaining Fr1.6 billion comes from France Telecom, which has a 16-percent interest in Bull. The state owns 72 percent of the shares. In addition, IBM (with a 5.7-percent interest) and the Japanese concern NEC (less than 5 percent) have also been "invited" to participate in the recapitalization procedure.

The Bull group has been sitting with a loss since 1990. Earlier this month, former Chairman Pache had asked for a capital injection of Fr9 billion, over and above the Fr2.5 billion already allocated in February.

Last week, the new top man was not yet in a position to say whether any more than the previously planned 6,500 job cuts would be made.

Germany: Study on Innovation, Research, Company Success

94WS0071A Duesseldorf HANDELSBLATT in German
27 Oct 93 p 26

[Article by Dr. Rolf Berth: "Management's Dearth of Ideas Has Disastrous Consequences for Market Position"; Subheadline: "Kienbaum Group Researched German Companies' Power of Innovation"]

[Text] Tuesday, 26 October 1993 [HANDELSBLATT]—Innovations are acquiring enhanced status in view of the weak economy, increasing competition from the Far East and rising costs that are making Germany's economic position less attractive from one year to the next. Fresh ideas are one of the few alternatives for improving or at least maintaining competitive position through mental and creative superiority.

The Kienbaum-Akademie has researched the way in which the ratio of innovative products to total turnover—so-called innovation intensity—has developed over the past 20 years. The upshot is that the ratio of innovations is receding: less so in the case of small improvements, but by 32 percent for fundamental breakthroughs for which Germany once enjoyed an international reputation.

Improvements are occurring only in tiny dribbles. Many companies obviously have only limited expertise any longer for the big successes, the breakthrough innovations, like Swatch or the airbag, that excite the world and set entirely new standards.

Since the only companies admitted as participants in the survey sample were those that published financial data for the last 20 years, economic success was correlated to a wealth of ideas. In the process, Kienbaum agglomerated the product ideas occurring in marketing and in research and development, respectively.

The outcome of the survey was disarmingly plain. Capital yields, turnover yields, growth and the success of innovative products were all 183 percent better among those bubbling over with ideas. In other words, those short on brainpower and lacking imagination realize only 42 percent of the yields of the idea-intensive.

So we possess proof for one of the most important factors in successful management. Success is nearly always identical with fresh ideas! This now makes it even more crucial to further extend our knowledge of the way innovations come about. How is it that some are abundantly endowed with ideas while others have none? What is the fate of raw concepts until turn into successful products? Who has these ideas?

When asked how many successful products they would like introduced annually, most desire 1.3 per year. This yields eight introducible products each year.

Based on the rule of thumb proposed by Kienbaum, all those companies need to have 1.3 times 70 = 91 ideas in their quivers. But, in actuality, there are only 17.5 ideas. This would just barely suffice for one successful product every four years.

One of the most interesting results is the profile of the so-called model companies. They are models in terms of market success, turnover and capital yield, liquidity and renewal. The portrayal of the innovation situation appeared quite differently and highly satisfactory in their case:

- The volume of innovations over the past 20 years rose between five and 10 percent.
- If, for example, they wanted to introduce only a single successful innovation yearly, they still had 57 raw concepts for it.
- Moreover, in such companies innovations matured more quickly and achieved profitability more rapidly (approximately 50 percent more speedily in both instances).

The question automatically arises: How many companies are there like this? The unpleasant fact is that there are few such companies. Percentage-wise, it is estimated they number about 17 percent. It is not possible for the economy to recover on the basis of this small cluster of model companies. By themselves they cannot decisively improve the competitive position. Let it simply be noted here in passing that an accurate survey of the profile of such successful companies still constitutes an urgent task for economic research that has not at all been tackled.

The most significant and dramatic result of the survey is the fact that there is a typologically tiny group of approximately 16 percent of human beings who need change and innovation like a drowning person needs a life preserver. Their urge for continual improvement and change can, in fact, almost be called compulsive. These are the highly creative individuals.

Nearly 80 percent of all fresh ideas stem from the tiny, merely 16 percent strong, group of visionaries and discoverers. The remaining 84 percent are "creativity-resistant." They love nothing better than the tried and true. When confronted with a fresh idea they even have a thousand reasons ready as to why that should not be done, as to everything that is negative about it, etc. There would be no light bulbs or automobiles, no computers or antibiotics, without the highly creative individuals. And they have constantly had to wage an earnest campaign against the 84 percent of the "innovation-resistant."

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Airbus Business Organization, Need for Changes Discussed

94WS0071B Frankfurt/Main FRANKFURTER
ALLGEMEINE in German 28 Oct 93 p 20

[Article: "Europe's Airbus Labors Under Innate Flaw"; Subheadline: "Consortium in Lieu of Joint-Stock Company/ Partners in Conflict of Interest/ Even Daimler Spots Advantages in Interim"]

[Text]Munich, 27 October—Jean Pierson, acting director of Europe's Airbus consortium, is calling for a new corporate structure for the Toulouse-based Airbus Industrie. According to press agency reports, Pierson stated that the present arrangement, a loose sort of cooperative "community of interests" based on French jurisprudence ("groupement d'interet economique" ["economic interest group"]) with no published balance sheets, has "attained its genetic limits." He cautioned that in its present form, customers will not return in the event of a future upswing. The result will be higher losses and the consortium might even be forced out of business.

Pierson's admonition came as a surprise even to the Airbus partners, namely, Daimler-Benz and the French aerospace firm Aerospatiale, each holding 37.9 percent, British Aerospace, holding 20 percent and Spain's Casa, holding 4 percent. His gambit revives the long-standing call for converting the European Airbus consortium into a joint-stock company. There has been a strange quietness in past years regarding this proposed change that may sound like a technicality but that is extremely significant for its consequences. So, since the sixties, Airbus has been burdened with an inherent organizational defect. It is lacking an effective management able to apply meaningful business-management solutions.

Contrariwise, the consortium is a patchwork of manifold interests. As a result, it basically operates as a sales organization without its own production. Accordingly, the high and mighty Airbus company has to dicker for the lowest possible subcontracting in order to be able to show a profit for its shareholders. The subcontractors, however, are in a good bargaining position. They are Airbus Industrie's partners. In their role as manufacturers they therefore try to get the highest possible prices

for their subcontracting. The arrangement resembles an oxymoron. Paradoxically, the four European partners are interested in both a profitable and a cost-intensive Airbus Industrie.

The partners could resolve this conundrum by their ability finally to decide on converting the consortium into a joint-stock company. Then a duly empowered corporate management could have the aircraft built in the cheapest and most efficient location. Spurning this solution will cost dearly. Although it is hard to come up with the figures, Market experts estimate the cost disadvantage of the present organization at up to 10 percent of turnover. Obviously such disadvantages stem from the costly transport required to get the individual parts clear across Europe to a site radiating political opportunism. The debates over the assembly site of the new Airbus model A 321 also constitute a fresh example. The decision ultimately fell upon Hamburg, not primarily because Hamburg could justify the lowest production costs, but rather for national considerations. Hence it was portrayed as a major success that a finished aircraft at last would taxi out of a German hangar.

Originally, the political bent of the Airbus organization represented the price for achieving broad European cooperation in the field of aircraft construction. To be sure, this drawback was quite soon criticized, primarily by the Germans. But calls to convert the consortium into a joint-stock company fell on deaf ears in France. After all, the French had an interest in the status quo that enables them to portray the Airbus as a French aircraft, despite their minority share. Calls for a reorganization once again came to the fore when the German government's share in Airbus including the Messerschmitt-Boelkow-Blohm aircraft plant was transferred to the Daimler-Benz company in the late eighties. An international panel of experts was even set up to examine the prerequisites for the conversion. But since then there has been silence surrounding the project for reorganization. The expectation that Daimler-Benz, as a private company, would be able to accomplish the reorganization sooner than the political considerations of a deadlocked federal establishment, was not realized.

Still, Daimler-Benz and its aerospace subsidiary Deutsche Aerospace [DASA] continue to view the joint-stock company as the appropriate corporate form for Airbus. But DASA claims there are more important issues at present. Given the drop in demand, the focus should be on the sale of aircraft, not on opening a battle zone inside the consortium. Besides, political assistance from Bonn would be required for the conversion since it was a French government partner that had to be won over.

But there must be some other reason why, in the recent past, Daimler-Benz and DASA, have no longer been championing the conversion, at least publicly. Plainly, the German partners too have come to terms with the status quo. From a short-term optic at least, even Daimler-Benz itself is profiting from the non-optimum organization. As a co-managing partner it can insist on a

principal supplier role in Germany without having to make the most favorable offer for each individual part. As the saying goes in the sector, for certain aircraft components, Daimler-Benz even enjoys "Ius primae noctis," ["having first shot at them"—literally, "first night's privilege," referring to a practice whereby lords enjoyed the privilege of spending the first night with newly married brides of their subjects] provided they do not jack up the invoice prices too highly. Even a glance at the yearend account reveals that the German partner are simply not hurting from the present arrangement. Last year, before the aircraft market caved in, it was only the juicy DM650 million profit from the Airbus subcontracts that hedged DASA's DM340 million loss.

Still, Pierson's admonition raises a painful point. In a longer perspective, the consortium cannot avoid improving the organization, if the entire enterprise is to survive. With their labor-cost advantages, serious competition in the aircraft industry is growing even in Asia and Latin America. There is no permanent guarantee for the technical edge that Airbus holds in areas such as navigation or the use of materials and that has justified high wages so far. The associated cost disadvantage, however, stemming from the less efficient organization is growing increasingly precarious. Simple attempts at warding off competition such as sealing the borders are precluded in the case of Airbus since it depends on free trade unlike nearly any other product. In any event, billions in subsidies, as in the past, are unlikely given the empty government treasuries in Europe and the looming GATT international trade agreement.

EAST-WEST RELATIONS

SEP Proposes European-Russian Rocket-Engine R & D

94WS00814 Paris AFP SCIENCES in French
23 Sep 93 p 13

[Article: "Russian-European Rocket-Engine Demonstration Program"]

[Text] Paris—On the initiative of the European Propulsion Company (SEP), the SEP and its European industrial partners, on the one hand, and CADB [Bureau for the Design of Chemical Process Control], NPO [Scientific Production Association] Saturn, and the Russian Space Agency (RKA), on the other, propose to ask ESA [European Space Agency] and CNES [National Space Studies Center] to support a rocket-engine demonstration program, the French company indicated on 22 September

Thanks to the experience Russia has acquired in the field of rocket-engine combustion cycles and European know-how in building models, this program should enable them to obtain reliable elements of comparison between the different types of rocket engines

In the planning for three years, this consists of a program in Russia of tests on an existing engine, on the basis of which the Europeans will develop models. The purpose of this program is to better prepare ourselves for the choice of the future developments of advanced engines that will be necessary for the space transport systems of the next 30 years, specifically in the field of reusable systems.

The cryogenic engine chosen for this demonstration program is the D-57, developed by the firm Lyuka, and which was originally designed for the Soviet lunar program.

Matra Datavision Expands East European Base

94WS0081B Paris *PRODUCTIQUE/AFFAIRS*
in French 10 Oct 93 p 3

[Article: "Matra Datavision Strengthens Its Presence in CIS Republics"]

[Text] Matra Datavision is expanding its activities in Eastern Europe and it has announced the opening of new offices and the establishment of a distribution network in the CIS, a market right in the middle of industrial modernization and reconversion in which Euclid has already met with success on many occasions. At the end of June 1993 several dozen customers were indeed already using it for CAD/CAM applications in the automobile industry (Belavtomaz, Green Complex, Avtozaz, ...), the aerospace industry (NPO Energia, NPO Prikladnoy, Mekhaniki, Vniitranasmash, ...), and the electromechanical industry (Turboatome). The French group is developing a commercial and technical organization closely associated with the opening of sales and support offices in Moscow (Russia), Minsk (Belarus), Kiev (Ukraine), and is also establishing a distributor network in the principal CIS republics. The implementation of the cooperation agreement concluded with the Academy of Sciences in Moscow should strengthen Matra Datavision's reputation for CAD/CAM with the different Russian Republic industrialists.

Germany: Siemens To Invest Further in CIS Energy

MI2610100293 Munich *SUEDDEUTSCHE ZEITUNG*
in German 1 Oct 93 p 34

[Article by Werner Jaspert: "Siemens KWU Acquires Higher Profile in Russia—Group Sees Great Opportunities in Power Station Construction/Plans for Investment in China Too"—first paragraph is *SUEDDEUTSCHE ZEITUNG* introduction]

[Text] In accordance with the business policy that it is pursuing worldwide, i.e., to produce as close to the market as possible in the major regions of the world and to purchase on a global scale, the Power Engineering Division (KWU) of Berlin and Munich-based Siemens AG has for some time been taking a greater interest in Russia and the CIS states as well.

In view of the economic and political difficulties involved, this is a business that requires a large advance outlay and a lot of staying power. Moreover, Russia has a power station industry of its own, currently suffering from a dearth of business, so a foothold can only be gained in areas that have fallen behind in terms of know-how. Financing problems and high inflation rates are not least among the factors that leave investment projects little room for maneuver.

No Seven-League Boots

Siemens Board Member and KWU Division Chairman Adolf Huettl makes it quite plain, therefore, that for the time seven-league boots are not the best footwear for expanding business relations, as this can only be achieved by small steps in the present circumstances. However, he sees great opportunities for moving faster in the medium and long term, as a large proportion of Russian power stations are antiquated, few fossil-fuel-fired power stations have been fitted with antipollution systems, and their efficiency is very low by Western standards. There is also much to be done in the nuclear power sector, where several of the existing plants, depending on their type and generation, still leave a lot to be desired in terms of safety. Russia nevertheless intends to raise the percentage of power generated by nuclear stations from the current 12 to 30 percent.

In spite of all the problems, Siemens KWU is determined to establish a long-term presence in Russia, especially as it has got off to a promising start so far. In Huettl's view, the group's power division has already taken the lead over its world competitors in Russia, while medical engineering leads the field in Siemens' Russian business (400 million German marks [DM] sales). Other strong sectors are plant engineering and automation, telecommunications, and information technology. However, power station engineering is now catching up (in the 1991-92 financial year, KWU achieved sales worth DM15 million in the former USSR) and has already scored its first successes with joint ventures and established itself in important strategic positions with minority holdings.

Following its 10-percent holding in AO Kalushskiy Turbinny Zavod (KTZ) in Kaluga, Russia's largest manufacturer of industrial turbines, a joint industrial cable venture in Perm, in which Siemens has a 33.6-percent holding, and a joint gas turbine blade venture in St. Petersburg (Siemens holding: 36.5 percent), Huettl is now showing a, not unreciprocated, interest in a minority holding in the Leningradskiy Metalicheskiy Zavod (LNZ) in St. Petersburg, the largest manufacturer of power station turbines in the world.

A minority holding in St. Petersburg-based generator specialists Elektrosila would appear to be a rather more distant prospect, but a distinct possibility all the same. The two companies already work together in various sectors, and Elektrosila is the successor to a dynamo

factory that Siemens founded 80 years ago. The show-piece of coproduction with LMZ is the joint venture enterprise Interturbo St. Petersburg (LMZ 58.3 percent, Siemens 41.7 percent), which specializes in the production of gas turbines using Siemens know-how and has just manufactured its first turbine. Production capacity is projected initially at three or four turbines a year, rising over the long term to 10 to 12 a year. This adds to Siemens' production capacity to date in Berlin (35 turbines/year) and Milwaukee (15 a year), with the result that Huettl is confident of keeping an approximately 25-percent share in the promising world gas turbine market (worth about DM15 billion annually).

For the time being, Siemens has no serious rivals to its LMZ-Interturbo venture in Russia. The Interturbo turbines will be installed in the St. Petersburg gas and steam turbine power station, the contract for which was awarded a few weeks ago (Siemens' share amounting to DM350 million) and which makes Siemens the first Western company to penetrate the Russian market with this innovative technology. Huettl foresees a bright future worldwide, and particularly in Russia, for gas and steam technology, which consumes considerably less gas than conventional power stations and is already scheduled for use in further new power stations to be built in Krasnodar, Karmanosk, and Stschokina, especially as the bill for parts imported from abroad can be settled in electricity and gas exports.

KWU's policy is also of interest to the Russians because in the future it will allow Russian supplies of products, components, and services to acquire a greater share of the worldwide power station business and to work on joint projects in other countries in conjunction with other Russian partners. Not least among the charms that projects of this type hold out for Siemens is the fact that Interturbo, for example, builds turbines at least 20 percent more cheaply than the Berlin factory.

Production for Export

Siemens has been performing spot contracts and deliveries for nuclear power stations in Russia for several years, one example being the diagnostic systems that it has supplied for 35 blocks. It has worked particularly closely with the Kola nuclear power station. Nevertheless, it occurs to no one in Russia that the country is importing nuclear power stations. Quite the contrary. Russian suppliers themselves want to sell nuclear power stations abroad.

Next on KWU's agenda are negotiations with China on a program that envisages joint ventures in the turbogenerator, hydraulic power station, and steam turbine sectors. The incorporation of a joint company producing process control systems is already being finalized, with contracts scheduled for signature before the end of October.

France, CIS: Joint Computer Research Center Set Up in Moscow

BR2411155593 Paris *ELECTRONIQUE*
INTERNATIONAL HEBDO in French 18 Nov 93 p 9

[Text] The INRIA [French National Computer and Automation Research Center] and the M.V. Lomonosov University have set up a joint research center in Moscow, called the "A.M. Liapunov French-Russian Institute." The center, which is located on the premises of Moscow University, is equipped with French computer hardware and will focus on computer and applied mathematics research. Its primary aim is to enable French and Russian researchers to cooperate in joint projects. Five joint research projects have already been defined, including computer systems modeling and evaluation, parallel systems and compilers, and object-oriented operating systems. The A.M. Liapunov Institute will be inaugurated by French Research and Higher Education Minister Francois Fillon during an official visit to Moscow.

EUROPE-ASIA RELATIONS

Netherlands, PRC: Minister Signs Research Agreements With PRC

BR0411130193 Zoetermeer *WETENSCHAPSBELEID*
in Dutch Sep 93 pp 23-24

[Article by Josep Pieper: "Netherlands Institute in Beijing"]

[Text] The Netherlands is to investigate the possibility of opening a Netherlands Institute in China. This was announced in Beijing by Minister Ritzen [education and science], during his working visit to China in August. The minister can look back on a successful visit, as he himself describes it. Earlier that week, he had already signed a cooperation agreement with four major Chinese research establishments.

At the end of August, a delegation from the State University of Leiden visited Beijing to examine the various possibilities for setting up a Netherlands Institute, and it is proving quite a tricky business. Firstly, the Chinese authorities have to give their permission. Secondly, the accommodation itself—should it be in the Netherlands Embassy, like the Italian Institute? Or would it be better to locate it inside a Chinese host organization, such as a university or research organization, or even the state education department? These are the questions the Leiden delegation must answer.

Extra money is involved in the possible establishment of a Netherlands Institute, totaling approximately 0.5 guilders. While in Beijing, the minister promised that the Ministry of Education and Science would be prepared to provide half of that amount in the first three years. The rest will have to be paid for by the universities of the Netherlands and the KNAW [Royal Netherlands Academy for Sciences].

According to Ritzen, the Netherlands Institute can make a significant contribution to scientific collaboration between China and the Netherlands. The Institute would be able to support Chinese researchers carrying out research in the Netherlands, as well as Netherlands researchers working in China. In addition, it would enhance the scientific presence of the Netherlands in China. During his working visit, the minister signed cooperation agreements with four leading establishments of higher education and/or scientific research. These were the State Education Department of China (SEDC), the Chinese State Science and Technology Department (SSTC), the Chinese Academy of Sciences (CAS), and the Chinese Academy of Social Sciences (CASS).

Science in China

Scientific research in China is highly decentralized and is the responsibility of various ministries and departments. In theory, all fields of science in China are covered by collaboration with these four organizations (SEDC, SSTC, CAS, and CASS). The cooperation agreements make it possible to exchange students and individual researchers, and to set up joint projects. In this way, both the Netherlands and China can make optimum use of each others' scientific specialties. Furthermore, China and the Netherlands will work more closely together in the fields of global change, geology, biology, law, and history. Together with the student exchanges, an overall amount of approximately 2 million guilders is involved.

Ritzen wanted to give "a strong boost" to Chinese-Netherlands collaboration during his working visit in mid-August. Among those helping him to fulfill his wish were Dr. P.D.J. Drenth, president of the KNAW, and Dr. P.A.J. Tindemans, director of research and science policy at the ministry. Of course, research and development were high on the agenda during the working visit. However, they are directly linked to economic interests and, during informal talks with his Chinese colleagues, the minister was able to make various proposals. The intention is that Netherlands economists train their Chinese colleagues in fields such as taxation, social security, industrial financing, and share trading. Netherlands lawyers will also be able to transfer their knowledge of international commercial law with Chinese lawyers. In return, the Netherlands can benefit from Chinese know-how and experience in the fields of traditional medicine, oceanology, and environmental sciences. Ritzen hopes to find an outlet for these projects in industry. In China, schools and universities are much more used to collaborating with industry.

Joint ventures between foreign companies and Chinese state-run companies are playing an increasingly important role in this respect. Ritzen is hoping to instill enthusiasm into Netherlands industry for research projects with an economic angle. To him, the quadrilateral relationship is obvious: A Netherlands and a Chinese company and a Netherlands and a Chinese university entering into a joint research and education

agreement. Ritzen is thinking, for example, of Philips and Unilever because they already have a strong presence in China.

Human Rights

Obviously, Ritzen was asked how he views close collaboration with a country where students who demonstrated against the regime four years ago are still in reeducation camps, and where the university of Beijing was fenced off by the army on 3 June this year, because the events of four years ago were being commemorated. At the end of his working visit, the minister explained that the oppressed student uprising on Tien An Men Square in 1989 had led to a freeze in relations. Since then, there has been a gradual thaw. The cabinet has opted for intensive contacts, which does not mean that the Netherlands is overlooking the human rights issue. However, this was not discussed in the formal contacts with Ritzen's hosts since, generally speaking, it would have been counterproductive. In an informal context, it seems that China is well aware that acceptance by the international community is conditional on Chinese human rights policy.

In 1985 and 1987, when Ritzen was still a professor at the Erasmus University, he himself spent some time in China and can speak the language. He was pleasantly surprised by the changes which have since taken place in the country, both at the economic and, especially, the political level. The Chinese opposition is well organized and is being given increasing opportunities to express itself. "A more open China welcomes the Olympics" is the slogan adorning every street corner.

French Industry Begins to Penetrate Vietnam

94WS0035D Paris L'USINE NOUVELLE in French
9 Sep 93 pp 44, 45

[Article by special correspondent in Vietnam Alain-Gabriel Verdevoye: "Abroad: 72 Million People in a Country Where Everything Remains to Be Done: French Companies Open Up the Vietnamese Market"—first paragraph is L'USINE NOUVELLE introduction]

[Text] The country offers a very liberal investment code: cheap labor, low construction costs. But you had better start small. Equipment and components must be imported from abroad.

Despite 30 years of war and four decades of communism, a quaint colonial atmosphere still hovers around Hanoi. Ocher-colored stone, long arc-shaded avenues, in the humid tropical climate the Vietnamese capital still retains the provincial air that makes it look so much like a town in southern France. Misleading appearances. Apart from deceptive facades, the former Paul-Doumer bridge across the Red River, and a few roads and railroads, nothing is left of 80 years of French presence. Neither in the North nor in the South. Seen from Vietnam, metropolitan France is just a distant country.

that is hard to find on a map. As for the French language, only a few "old people" still speak it...

Investors beware: French companies are welcome if they bring in money and technology. But they should not count on pseudo-nostalgia nor expect preferential treatment! Realpolitik is in: economic opening-up will benefit Asiatic neighbors first: Taiwan, Hong Kong, and Korea, no matter how anticommunist they may be. While waiting for the dollars of Uncle Sam who, the Vietnamese hope, will soon lift its 29-year old embargo.

Yet, French companies take a very close interest in this practically virgin market of 72 million people, which will soon receive the international aid manna. Especially since France is the second bilateral assistance provider after Japan. Gerard Longuet, the industry minister, intends to take advantage of this situation to promote French projects during his next visit, in mid-October. The most spectacular project so far is an oil refinery in the south of the country, with a 6.5 million ton capacity: Total will direct the feasibility study. The investment contemplated will exceed 7 billion francs (Fr). Make no mistake, however! The Vietnamese authorities may think big, but reality is far more prosaic. "The Vietnamese market has a huge potential, but for the moment it is quite small. Avoid getting involved in excessively large projects, which may cost a lot in terms of time, money, and men," Eric Maurin, the local representative of the Indosuez Bank, cautioned.

The Alsatian Potash Company understood the lesson. At Bien Hoa, in the vaguely industrial zone of Ho Chi Minh City, a small brand-new factory employing 50 people processes soybeans and mixes them with fishmeal. As a result, the French-controlled joint venture, named Proconco, is the leading animal feed producer in Vietnam, far ahead of local companies. In addition, production will double next year.

Simple Projects in Promising Sectors

The general manager, Philippe Serene, born in Indochina, 51 years old including 13 years spent in Bangladesh, Egypt, and Peru on behalf of the World Bank, is awaiting resolutely the forthcoming establishment of a Thai competitor. His formula: "Choose simple projects in promising sectors with no serious competitor at the start and avoid taking over old rotten factories, so as to make profits quickly because Vietnamese partners want to earn money right away," this fighter pointed out: he had to negotiate for three years before starting production in November 1992. Before that, his local partners filed for liquidation three times.

Another pioneer is Elf Gas. On the bank of the Saigon River, at Nha Be, near Ho Chi Minh City, a joint venture of the French oil company and the City Committee has been bottling butane-propane gas since the end of last year; it employs 23 people. It has a processing capacity of 50,000 tons per year, for a modest investment of Fr38 million. The leading Elf Gas customer is currently... the Alsatian Potash Company. For the time being, the

French butane-propane bottled gas has no competitors and the market looks promising. Jean-Pierre Bourdin, 46, formerly assigned to Mauritius, is trying to lock in his distribution network before the impending arrival of a Vietnamese competitor who will have the benefit of Australian technical assistance. The Elf Gas plant expects to break even by 1994. A second unit might soon be set up in Hanoi.

Business is also off to a good start for BGI (International Beer and Ice Company), an acronym that used to be popular in the former French Indochina. After leaving the market in 1975, the company is being revived as a joint venture between Castel and the Tien Giang province (South Vietnam), which operates two breweries in the Ho Chi Minh City area. In this case, the investment exceeds Fr200 million. The effort made found an immediate reward. BGI beer is a big success in what used to be Saigon. During the first four days of production, last August, sales exceeded Fr10 million.

Close on BGI's heels, Carnaud Metalbox will build the first local drink-can factory, for Fr250 million. Production should start in about one year. There is no lack of projects. Rhone-Poulenc, which has been present in Vietnam for 30 years without interruption, is planning to develop its Vinaspecia joint venture which formulates medical drugs based on raw materials imported from France. Last May, Roussel-Uclaf decided to take control of its 49-percent-owned Roussel Vietnam subsidiary, the leading pharmaceutical company in the country. Sanofi is setting up its own facilities. Alcatel will soon start manufacturing electronic equipment for telecommunications in a plant in Hanoi, and it is negotiating a second project, to manufacture cables. Lafarge-Coppee (building materials) and Lyon Water Company-Dumez (construction and civil engineering) intensify their prospecting. Renault (see above [box not reproduced]) and Peugeot are considering manufacturing cars on location.

Now or Never!

"Before considering setting up facilities, French manufacturers should realize that agricultural raw material prices are rather high, subcontractors mediocre, and the plants that the Vietnamese will try to sell them obsolete, with installed capacities well below critical size. Practically all equipment and components must be imported from abroad, and paid for in dollars. Foreign-currency purchases, however, are hard to finance when you sell your products on the local market, in dong, the Vietnamese currency," a banker indicated. Add to this a nit-picking bureaucracy and a lot of red tape, the fact that many local partners are not solvent, and the difficulties encountered in recruiting qualified English-speaking personnel.

You must also reckon with archaic infrastructures. For instance, it takes five hours by car to cover the 170 km that separate Hanoi from the Bay of Halong, one of the country's main tourist areas. Also, between Hanoi and Ho Chi Minh City (1,700 km) trains travel at an average

30 km per hour on a single track! "We still have no water and no telephone. We must manage with tank trucks and portable telephones," Jean-Pierre Bourdin of Elf-Gas admitted for his part. As for his customers, although they are located in Ho Chi Minh City suburbs, some of them experience power cuts four days out of seven. Vehicle maintenance is another problem: In all of Vietnam, only one state-owned garage—dilapidated and artisanal—is qualified to repair Renault cars... Contrary to neighboring Thailand, or even Malaysia, Vietnam still lives in times of adventure and resourcefulness...

In times of opportunities, too. Two or three years from now, the die will be cast and market shares distributed. For foreign manufacturers, it is now or never! Besides, the country offers a very liberal investment code, political stability guaranteed by regular visits from former Singaporean prime minister Lee Kwan Yew—now serving as unofficial advisor to the government—and a labor force reputed to be skilled and hard-working. Wages are among the lowest in the region: under Fr200 per worker in the North, Fr300 in the South, and Fr450 for an engineer. Also, factory construction costs are four times lower than in Europe.

Apart from local markets, therefore, Vietnam may eventually become a strategic base for companies wishing to relocate. Taiwanese and Korean companies are already manufacturing on location for the export market. French textile manufacturers are considering doing the same.

Investments: The Asiatic Dragons in the Lead

| | Capital Invested ¹ (Billion Francs) | Number of Projects ¹ |
|--------------------|--|---------------------------------|
| 1. Taiwan | 6.1 | 74 |
| 2. Hong Kong | 3.6 | 101 |
| 3. South Korea | 1.8 | 22 |
| 4. Great Britain | 1.7 | 17 |
| 5. Australia | 1.6 | 23 |
| 6. The Netherlands | 1.5 | 8 |
| 7. Japan | 1.4 | 31 |
| 8. France | 1.3 | 31 |

(1) As of 8 February 1993

Source: PEE Hanoi

UK Venture by Japan's Sharp Laboratories Europe Reviewed

93WS0729A Duesseldorf VDI NACHRICHTEN
in German 17 Sep 93 p 4

[Article by Jens D. Billerbeck: "A Feature of the European Research Landscape"]

[Text]

Japanese Company Doing Research in Oxford

Japanese companies do not only view the countries of Europe as lucrative markets, they are also interested in the ideas of local researchers and developers. Technologies for future products are not just developed in the country of Nippon. One example of this is Sharp Laboratories Europe (SLE) in the English university town of Oxford.

Clive C. Bradley is Managing Director of Sharp Laboratories Europe (SLE) in Oxford. He anticipates the question immediately, "Why does a company like Sharp invest in foreign research facilities?" His response lists several arguments in favor of such a commitment. For one, an internationally committed technology company cannot afford to do without productive influences from other scientific cultures, without the creativity of researchers who have a different mode of thought. For another, local research supports integration into the local markets.

"Besides," continues Bradley, "we in Europe have better access to what is happening at the institutes of technology and universities here. And, of course, we also want to avoid friction in international trade and improve our image."

The approximately 50 employees of SLE do not view themselves as appendages of a central laboratory in Japan. They have their own research areas in which they want to assume the leading technological positions. Work in Oxford is concentrated in four areas. These are optoelectronics, image processing, information technology—primarily in the areas of translation systems and distributed artificial intelligence—and liquid crystal technology.

The laboratory, founded in 1990, was first situated in rented offices. Then, about 13 million pounds was invested by 1992 in the construction and furnishing of its own building, located in an industrial park near Oxford. When finished, about 100 scientists and engineers will work here. Sharp employs a total of 6500 people worldwide in research and development. The investment for R&D is about 660 million pounds annually.

All research work done in the SLE is coordinated with the central research and development department of Sharp. The work is then done in Europe. Even the patents stemming from this work are applied for first in Europe or England. Bradley says, "We see ourselves as a part of the European research landscape and want to be accepted as such. Our goal is broad cooperation with other research facilities. In this respect, we attempt to be as open as we can." Of course, there are already joint ventures with British universities, primarily those in Oxford—but institutes of higher learning on the European continent are also on the wish list. According to Bradley, "We are also taking part in various European research programs."

The clear confession to be a European research facility is also expressed in the personnel policy. Most of the employees come from Europe, some from the U.S.A. and some from Japan. Staffing the position of Managing Director with a European is also part of this policy. He admits that higher salaries have to be paid for some European engineers than for comparable positions in Japan. However, this is made up for by the already mentioned advantages.

Ferroelectric liquid crystals are one of the research focal points in Sharp Laboratories of Europe. In Oxford, European developers are working on future technologies for the Japanese Sharp company.

Most of the research work at the SLE is in the area of basic research. Dr. Robert G. W. Brown is director of the optoelectronics area. He says, "We are working, for example, on semiconductor nanostructures to be able to produce new laser diodes with a broad color spectrum. Another team is working on optical neural networks. These make completely new basic approaches possible for image processing because they process optical information with optical means." In his opinion, the work on blue and ultraviolet lasers for optical storage and printing systems is on the verge of entering the production phase.

In the image processing sector in Oxford, a new method for the three-dimensional electronic representation of images is the primary focus. The new method does without additional aids—e.g., stereo glasses—and works in a manner similar to that of 3D prints which have been known for a long time. Another project is the development of qualitatively fine, high resolution color printing methods.

As a typical example for the development work oriented toward European market needs, Bradley mentions a computer-aided translation system. This system should be capable of translating texts automatically from one European language into another. In accomplishing this, the programmers had to solve substantial problems rooted in the different structures of the individual languages. A demonstration of the system, however, showed no change in meaning, even after a sentence was translated from English to German, then into French, and back into English.

Research work in the area of liquid crystals forms the fourth pillar in Oxford. Such crystals are being used to a large extent in the displays of portable computers. The Oxford developers are concerned here primarily with ferroelectric LCs. Compared to conventional materials, these permit substantially greater switching speeds.

Sharp Laboratories Europe is one example of the European commitment of the Sharp company but not the only one by any means. Kenjiro Tsugawa is the director of the Information Systems Department. He points proudly to the 25th anniversary of the European Central Office in Hamburg being celebrated this year. Throughout the world, the company has 64,000

employees and generated revenue of about 19 billion Deutsche marks in 1992. Tsugawa says, "In Europe, we were able to triple our revenue in the last ten years. Even in the difficult fiscal year of 1992/93, we were able to generate revenue of 1.2 billion Deutsche marks." In contrast to other companies, Sharp wants to continue to increase investment in buildings and plants and the expenditures for research and development, even in difficult times, because, "those are investments in our future."

German Machine Tool Industry's Prospects, Marketing in Asia Viewed

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[Article by Rainer Nahrendorf under the rubric "Companies and Markets": "Machine tool Industry/Berthold Leibinger, Former President of VDMA [Association of German Machinery Manufacturers], Sees No Technical Falling Behind Vis-a-Vis Japanese Competitors—Cautious Optimism. After the Crisis German Manufacturers Will Have Better Products, But Also Less Equity Capital"]

[Text] Singapore, Tuesday, 5 Oct 93 (HANDELSBLATT)—Former president of VDMA Berthold Leibinger, managing partner of Trumpf GmbH & Co. [Limited Liability Company], considers the bottom of the machine tool industry's business activity to have been reached, in spite of the new decline in incoming orders in August. In a conversation with HANDELSBLATT, Leibinger cites as the reason for his cautious optimism the fact that, among other things, the German machine tool industry's price competitiveness in Asia and America has increased because of exchange rate developments.

Leibinger headed the business delegation that accompanied Baden-Wuerttemberg Minister-President Erwin Teufel on this trip to South Korea, Japan and Singapore.

Leibinger based also on the upswing in business activity in the USA his hope that the machine tool industry will soon have passed through the bottom. This time the level of business activity in capital goods has risen sooner than consumption in the USA. His company has obtained in the USA for the 12th month in succession more orders than in the previous month in each case. An increase is beginning to show likewise in Great Britain, and there are the first rays of hope in France too. With the exception of Japan, where the situation is awful, Asia is also going well as ever, he says. On the other hand, the domestic trend is uncertain.

Difficulties Because of Exhausted Credit Framework

Leibinger was of the opinion that the German machine tool industry, in view of its organization and its products, will emerge strengthened from the present crisis. Its strengths above all will remain, but all will be weakened

in terms of their equity capitalization. It will be years before the German machine tool industry has made up for this decline in equity.

Leibinger is concerned that many companies will have a lot of difficulty in the upturn because they have exhausted their credit possibilities. However, an upturn also always means advance financing, he says. He is hoping the banks will go along prudently here.

The former president of VDMA does see the machine tool industry to be in a crisis in terms of business activity and structurally too, but not in a technological crisis. The way Leibinger sees the branches of the industry, he cannot detect any falling behind technically, he said. The German machine tool industry is at the top of the pyramid as a rule. Its companies have also already begun to eliminate some important causes of the crisis.

Presently the cost structure is being examined in many machine tool companies, their organization is being simplified, the company is being made "leaner," the number of personnel is being brought in line, and the number of managers is being reduced.

The realization is growing, he says, that the German machine tool industry is having difficulty in many markets because it has always had in mind its developments that which is technically possible, and to too small an extent engineering accommodating the market. A necessary difficult process of a change in thinking has begun here.

The German machine tool industry has to offer additional engineering value with its higher costs, which it will have also after so many rounds of modest wage negotiations in addition. Leibinger is confident that this will be a success, and he refers to the good research infrastructure in Germany.

The German machine tool industry must also be prepared to change its structure. That is, in a direct comparison of the number of German companies having from 100 to 200 employees with the American and Japanese machine tool industries, it becomes apparent, he says, that the machine tool industries in these countries are even more small and- medium-sized than the German. But it is often forgotten here that both these countries have a far larger domestic market than Germany does.

The Japanese and American machine tool manufacturers also have a markedly greater share of their domestic markets, he says. Japanese machine tool manufacturers have a greater than 90-percent share of their domestic market, which is twice as large as the German. By contrast, German companies have only an approximately 60-percent share of their domestic market.

While a small American or Japanese machine tool manufacturer does not necessarily have to export, the small German machine-tool-manufacturing company is unable to get along without this. Small companies,

however, are finding it difficult to operate in Asia or the USA without foreign help. In Asia above all German machine tool manufacturers are requiring service like that required by a company domiciled in the region. The business firm traditionally representing small companies is at a disadvantage here.

Leibinger, as he also said at the cornerstone ceremony for the German Industrial and Trade Center on October 4 in Singapore, sees as the main reason for the establishment of such centers the necessity of small and medium-sized enterprises to be present on site for selling, purchasing and service, and also—at least in subspheres—to cooperate. There is also to be a consulting service at the centers in order to facilitate startup.

In Leibinger's opinion the German machine tool industry is still not sufficiently represented in the Asian growth markets. Though Germany is number one worldwide, ahead of Japan, in machine exports, in Asia it is not the world champion but just the European champion. The German machine tool industry has only a 10-percent share of imports of machines into Asia, while the USA has a 17-percent and the Japanese a 45-percent. Leibinger considers a market share of from 15 to 20 percent attainable by German machine tool manufacturers in Asia by the year 2000.

Of course, for German machine tool manufacturers to have a growing share of the market in Asia willingness to cooperate with companies from these countries is also necessary. Part of the value added has to be furnished in Asia itself. What in Leibinger's opinion are the German machine tool industry's strengths and weaknesses vis-a-vis its competitors from Japan? Leibinger considers the German machine tool industry to be more flexible. It offers solutions to problems and is innovative and creative. Leibinger illustrates the weaknesses in dependability by the Germans' need to offer something new each time. But the price/performance ratio of the machines offered by the Japanese is more favorable. They focus on continuous series-type production and have a network of convenient subcontractors in countries like Taiwan, Korea and Indonesia.

The German machine tool industry will have to exploit the opportunities that present themselves in the supplying of components from the Czech Republic, Hungary and Poland. Though to begin with this will increase unemployment in Germany, over the medium and long term it will create new markets and with this also new jobs again in Germany because of the economic development of these countries, Leibinger says.

The pressure of having to offer a technical advantage over the Japanese means at the same time willingness to accept a risk in the product. Leibinger: "Our in any case already fast innovation pace has to become even faster."

Supplying of Components from Our Eastern Neighbors

German trade and industry are profiting from the training centers, like the German-Singapore Institute or

the German-Malaysian Institute, established and operated with German assistance in developing and newly industrializing countries, he says. "The Dual System of occupational training was one of our most important export items," Leibinger says.

In general, he wants heightened "Asia-consciousness" in Germany and stronger political presence of high-ranking German politicians in Asia. It is noted in Japan, he says, when the German foreign minister has not visited the country a single time in six years.

Asians Understand Quid Pro Quo in Foreign Trade Policy

Hardly a single Asian country is pursuing a liberal foreign trade policy, he says. But they have a precise understanding of "quid pro quo." Germany too has to take part in the foreign trade policy power play, but not with a return to bilateralism. Germany should adhere to its liberal principles, but press for the liberal behavior of Asian countries. There are two strong arguments for this. One is the large German market, and the other is Germany's key role in the EC. Countries that protect their markets have to be told that if they do not open up their markets Germany will not be able to prevent the shutting down of the European market.

Foreign students should be given the opportunity to earn a German doctorate—but in English—with the aid of stipendia in a two-year advanced course of study, he says. German trade and industry always do good business where they run into executives abroad who got their degree in Germany. But the German language is an intimidating obstacle for too many.

There has to be stronger aid-tying in aid to developing nations. It will not do for Germany to give the money and for other countries to supply the machinery and equipment, he says.

International Affairs: NorTel To Set Up Chip Ventures in PRC

BR1011170093 Chichester INTERNATIONAL TELECOMMUNICATIONS INTELLIGENCE in English 18 Oct 93 p 15

[Unattributed article: "China - NorTel Signs MoU for VLSI Joint Ventures."]

[Text] In Shanghai, [Canada's] NorTel signed a Memorandum of Understanding (MoU) with the Shanghai Instrumentation and Electronics Bureau which is expected to lead to the establishment of two joint ventures including an advanced VLSI (very large scale integrated) circuit fabrication facility and a VLSI circuit design centre in the People's Republic of China.

The new VLSI circuit design centre will design and supply application specific integrated circuit (ASIC) devices for Chinese industries including consumer electronics, telecommunications, and instrumentation.

The VLSI circuit design centre will design and supply application specific integrated circuit (ASIC) devices for Chinese industries including consumer electronics, telecommunications and instrumentation.

The VLSI manufacturing facility will be designed to produce advanced CMOS and BiCMOS circuits based on one-micron technology and in the future sub-micron technology. The CMOS and BiCMOS circuits will be targeted for electronics factories in the Shanghai area, as well as in other parts of China.

The two joint ventures are planned to commence full operation next year following training of local employees by NorTel engineers and telecommunications VLSI experts.

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